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TWELFTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH

OF

NEW YORK.

TRANSMITTED TO THE LEGISLATURE FEBRUARY, 1892.

ALBANY:
JAMES B. LYON, STATE PRINTER.
1892

STATE OF NEW YORK.

No. 56.

IN ASSEMBLY,

February, 1892.

TWELFTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH.

To the Honorable Roswell P. Flower,

Governor of the State of New York:

Sir: I have the honor to transmit herewith, the Twelfth Annual Report of the State Board of Health of New York, together with maps and appended papers.

Very respectfully, your obedient servant.

LEWIS BALCH,

Secretary.

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20,000. The reported mortality, therefore, represents that of a population of about 5,980,000 inhabitants. There were received during the year reports of 128,078 deaths, of which 123,878 were recorded in the monthly bulletins, the remainder being delayed returns. This gives as the annual death rate 21.41 per 1,000 population. The death rate for 1890 was estimated at 19.65 per 1,000 population.

The average number of deaths daily during the year was 345; in 1890, it was 320; in 1889, 286; in 1888, 286; in 1887, 264; and in 1886, 238. For the past six years the average daily mortality has been 300.

The most noteworthy occurrence during the year in respect to disease was the outbreak of epidemic influenza, or, as it has come to be popularly called, grippe. This disease first made its appearance, in recent times, shortly before the commencement of 1890, and its onset then was sudden and almost simultaneous in all parts of the State, not less than half of the population being affected. The entire force almost of the outbreak fell upon the month of January, the mortality of which was 5,000 in excess of the average for this month for the preceding five years. It was estimated that the mortality from this cause in 1890 was 5,000.

The disease returned in the early part of 1891, but not with the sudden onset of the year before. It seems to have existed as early as January and February, but not so as to materially affect the death rate; but in March there was an abrupt rise in the daily death rate to 344, and the epidemic reached its height in April, when the very large daily average death rate of 463 was reached, the largest ever recorded in this State, and equivalent to an annual death rate of thirty deaths per 1,000 population, or ten above the normal. The epidemic lasted, in its effects on mortality, into June, up to which time it is probable that the number of deaths was increased by reason of it by 8,000. In December the disease returned epidemically for the third time, and in December it appears that 2,000 deaths were attributable to it, so that during 1891 there were not less than 10,000 deaths due to epidemic influenza. The third appearance of this disease was still in progress as the year ended, and there is no doubt that the early months of this year will continue to show the large death rate which is found to occur when influenza is prevalent. For reasons that are stated elsewhere the exact mortality from this disease can not be given. It expresses itself under reports of death from various other causes, the chief of which is that of acute respiratory diseases. A careful study is being made of all the facts of this disease, and the causes upon which it depends. It may be probably anticipated, judging from its past history, that it will prove to be an exotic disease and will not be presumably acclimated here.

The mortality from ordinary zymotic diseases is somewhat higher than that of 1890; there were then 3.51 deaths per 1,000 population; 3.90 in 1889; 4.12 in 1888, and 3.96 in 1887. During 1891, taking the estimated reporting population at 5,980,000 there were 3.60.

Cerebro-spinal fever has not varied from the average degree of prevalence for years, causing about three per cent of the zymotic mortality. It appears to continue as a steadily occurring cause of death, varying with the seasons in the same ratio. There has been no epidemic prevalence of it. Typhoid fever caused 1,926 deaths, 1.5 per cent of the total mortality, and nearly ten per cent of the zymotic mortality, which is about the proportion for the past seven years. Extensive epidemic prevalence of it existed in the early part of the year in Albany, West Troy, Cohoes and Schenectady; it was unusually prevalent in the fall in Auburn and Laurens. Small-pox caused one death in Jamestown in January, one in New York in April, and in November it was brought by an emigrant to the town and vicinity of Seneca, Ontario county, where a number were sick with it and three deaths occurred. About the same time two cases occurred in Kingston. At the close of the year it did not exist within the jurisdiction of the State Board of Health.

Scarlet fever was more than usually prevalent during 1891, its increase commencing a little before the beginning of the year, and continuing through the spring months, since which it has fallen off, but is still about the average. It caused 12.7 per cent alteration of the principles on which the original plans were based.

In May, 1891, plans for the sewerage and drainage of the village of Far Rockaway were presented by the sewer commissioners, which met with considerable opposition from interested parties. After full discussion and hearing of arguments for and against, the plans were rejected on the ground that the discharge of sewage into Norton's creek, without purification, would be detrimental to the health and comfort of the neighborhood. This creek for a part of the day flows into Jamaica bay, and the discharge of sewage as contemplated was considered likely to produce a nuisance, by its deposit and decomposition on the shores and marshes, and the lodgment of the heavier matters in pools.

In November, modified plans were presented that contemplated the disposal of sewage into a deep channel of Jamaica bay. Full hearings were again given and one meeting of the Board held at Far Rockaway. The Board, besides familiarizing itself with the ground, instituted floating experiments to test the direction in which the sewage would be carried. These demonstrated, as the engineer's report shows, that the sewage would not reach the bay until more than two hours after the rise of the tide had begun, and that the first effect would be the dissemination of the same on the upper part of the bay, with considerable deposit on the shores and marshes; that the bar at the westerly end of the creek, being laid bare at low tide, would not again be covered for about three hours or more afterwards, as it would take the tide from the east that time to fill up Norton's creek to the level of the bar; that the current in the stream sets towards the west only during a portion of the flood tide; that it has little or no current for two hours and flows to the east during a period beginning shortly before high tide in the bay and continuing two hours or more after low tide; that the discharge of sewage into the creek during the time that the stream is flowing east is not advisable, because Rockaway inlet, into which the creek discharges, is stagnant during a period of one to three hours about the time of low tide, and never has a very heavy current; that it is used largely for bathing, and floating sewage would be objectionable; that if no restriction to the discharge of sewage at given times of tide be made, nearly all the sewage would go into the inlet to the east of the creek, and its discharge into the bay, except during the latter part of the flood tide, would be impossible, and during the latter time not desirable; that therefore it is not advisable to discharge the sewage into the creek at any time. The dredging of the channel, as proposed, would cause the current in Norton's creek to change to the west earlier than it now does, but not early enough to get the sewage out into a deep and strong current before low water outside the entrance to Jamaica bay. The plans were, in consequence, rejected.

Requests for information and advise have come from Oneida, Herkimer, Cobleskill, Mechanicville and other places, and it is probable that plans from one or more of them will be presented during the next year.

General Sanitary Investigations.

In the same category as the Far Rockaway sewers above mentioned, is the case of the proposed sewer in the town of Flatbush to discharge into Mill creek, a small and shallow arm of Jamaica bay. In this case, also, there was no doubt of the production of a local nuisance, which would be even more obnoxious than that at Far Rockaway. When the case was brought to the notice of the State Board of Health the proposed sewer was in process of construction by the sewer commissioners of the town of Flatbush, appointed under a special act passed in 1889. Certain residents of the town of Flatlands, adjoining the town of Flatbush, petitioned their board of health for remedy and protection from the prospective nuisance. The local board of health feared that they lacked jurisdiction over the case, as the nuisance was but prospective, although certain to occur upon the completion and use of the sewer. Appeal was then taken to the State Board of Health, and, it appearing upon investigation that the statements in the petitions were correct, the board of health of the town of Flatlands was convened and recommended to proceed to the proper legal measures to prevent the discharge of the raw sewage into the creek. The papers in the case are printed in the appendix.

The case of the pollution of Monhagen brook by the city of Middletown, Orange county, is in many ways similar to this. Monhagen brook flows from the city into the town of Wawayanda, and its condition, after receiving the sewage and factory refuse of the city is such as to produce a serious nuisance. Complaint of this nuisance was made to the board of health of the town of Wawayanda by residents of that town, and upon the request of the local board for information and advice, an engineer was sent to investigate and report. The boards of health of Wawayanda and Middletown were informed that the city should be held responsible for any nuisance of menace and danger to the public health, notwithstanding the fact that the creek has been legally condemned for sewerage purposes, and that the property owners along its course have been indemnified for such use of it.

On request of the board of health of Cherry Valley, an engineer was sent to advise with them as to the best course to pursue in dealing with a local nuisance, which, it was feared, would cause trouble. The general condition of the village was excellent. A few places, however, demanded prompt and effective measures, and may have been responsible for the cases of typhoid fever which prevailed. Vigorous measures were recommended which will doubtless be adopted.

The condition of the swamp on the Conewango creek, lying partly in Cattaraugus and partly in Chautauqua counties, was called to the attention of the board by petitions, affidavits and statements from numerous persons interested in the health of the citizens and the material welfare of the region. The swamp is in the upper portion of the basin of the Conewango creek, and lies generally at an elevation of over 1,200 feet above the level of the sea. The area affected by the overflows of the creek is about sixteen miles long and averages about three miles in width. From 25,000 to 30,000 acres are rendered practically useless for purposes of agriculture, except in unusually dry seasons, by the overflow of the stream and the slow recession of its waters, owing to the lack of sufficient outlet for the waters of the creek. There is no doubt that the presence of the swamp, and the decay of the vegetation, killed by the overflowing waters, remaining for some time on the surface and then receding, are seriously detrimental to the health of the population surrounding the swamp and living on the slightly higher elevations in its area. The overflows of the stream are liable to occur late in the spring and early in the summer, and to remain on the ground long enough to kill any crops that may have been planted, as well as the weeds and grass growing where it is considered there is too much danger of overflow to make it profitable to cultivate. The decay of this vegetation causes unhealthful conditions. The same occurs occasionally at later seasons of the year also. A large proportion of the area affected by overflows, one-third to one-half, may be considered as properly a swamp, which it is never safe to attempt to improve and cultivate. The remainder can be cultivated in dry seasons, but is always liable to have its crops destroyed by overflows. The malarial influence of the swamp proper is practically a constant quantity, increased at times as above indicated. The investigation of the swamp showed that the owners of the land cultivated it as closely as possible, running many risks of loss of crops, and it was evident that scarcely a year passes without the loss of thousands of dollars worth. The soil on the margins of the swamp is rich and the temptation to cultivate too strong to be resisted. There is no doubt that this cultivation improves the sanitary condition of the borders of the swamp, and the drainage of the swamp itself would complete and make permanent the work thus carried on in small portions by the farmers. The swamp, in many ways similar to the Tonawanda or Oak Orchard swamp in Genesee and Orleans counties, is of greater area and more easily improved.

Upon the representations in the documents submitted, the board began the investigation of the condition of the swamp and the possibilities of improving it. An engineer was sent to study the question and gather information upon which to base an opinion. His report is printed in the appendix. It was found that one of the principal causes of the backing up of water over the flooded area was a dam and bar, formed in a narrow portion of the bottom of the valley by a deposit of gravel, brought down by Davis brook, a small stream subject to sudden floods, and having such a fall as to carry large amounts of heavy gravel from the hills along its course. This dam and bar have increased in size for some years, and the condition of the swamp has been deteriorating slowly as the obstruction increased. It is found to be easy to remove this bar and, by straightening the creek for a short distance below, to afford additional fall. A sufficient cross section can be given to this channel to carry all water coming to it. The construction of this channel will greatly improve the condition of the swamp by removing the overflow rapidly, and will, therefore, relieve much area from overflow, and reduce the duration of flood on another large area from weeks to days. To insure the maintenance of the channel with the least possible attention, it will be necessary to change the course of Davis brook. It is fortunately possible to do this easily, and to discharge the brook into a low area some distance below the end of the proposed channel, where there is plenty of room to receive for many years the deposits of gravel which the stream may bring down. It is probable that the removal of the bar and the completion of the accompanying work described would not completely drain the swamp, as the channel of the creek is so tortuous through the area of the swamp that the discharge of the latter portion of the flood waters (after the stream has come within its banks) will be slow. This will prevent the thorough and rapid drainage of a considerable area near the creek, on account of the large area nearly inclosed in the many windings of the stream, and the fact that the banks of the stream are somewhat higher than the area a sort distance back. The amount of territory thus left partially drained will be an appreciable percentage of the area now affected, and it will probably be found advisable to straighten the course of the stream in its lower portions. Such straightening will practically drain the entire swamp. The expense of the work will not be large when compared with the benefit to be derived from it, considered either from a sanitary or an economic standpoint. The value of the lands will be increased much more than the cost of the improvement, both on account of the improved sanitary condition and the possibility of using all the lands at all times. The richness of the soil in the swamp lands is great, and the lands will be valuable at once.

Investigations by Order of the Governor.

The matter of the Glen Cove Starch Works has been before the Board again during the past year. In accordance with the reports published in the Eleventh Annual Report, an executive order was issued requiring certain constructions to be made, looking to the abatement of the nuisance caused by the discharge of the wastes from the starch works into the basin and creek adjacent to them. Upon petition of the officers of the company operating the works, the case was reopened to afford a further hearing to determine whether or not the order of the Governor should in any way be modified. The representatives of the company having asked time to experiment on a certain method, which, it was thought, would abate the nuisance, an extension of the time fixed in the Governor's order was applied for and granted. Owing to the lateness of the season when the construction was finished, it has not been possible so far to determine the efficiency of the methods. The details of the matter are printed in the appendix.

The board of health of the city of Auburn made complaint of the condition of Owasco outlet, within the city, making the allegation that the foul condition of the stream was due in large part to the mismanagement of the discharge of water from the State dam above the city, and that this was the cause of an outbreak of typhoid fever. An investigation and inspection were made, and the results reported on by the engineer of the board, showing that the condition of the stream was due to the city discharging a large amount of sewage into it, with insufficient dilution, and also to the number of dams within the city limits.

It was shown that the manipulation of the State dam has less effect upon the condition of the stream than that of any other dam in the city, and that no increase in depth of the outlet above the dam, or use of the lake as a storage reservoir would be sufficient to give water enough at all times to dilute the sewage to a degree to prevent nuisance. The proper method of treating the case was shown to be the construction of outlet sewers to carry the sewage below the city. As this is a matter entirely within the control of the city authorities, it was suggested that there was no ground upon which to make recommendations which could form the basis of an executive order.

[illegible]

[illegible] before [illegible] reduces almost or quite [illegible] Further investigations which are in progress or are planned for are necessary to determine whether this reduction in the number of bacteria means proportional purification of the water, and whether the increase in bacteria after rains is due altogether to bacteria washed from the soil, or is partly due to the stirring up of the bottom and the consequent addition of bacteria to the water, which had previously settled out of it. Another point for future determination is the effect of the dumping of garbage and night-soil into the water. The persistence in the number of bacteria below Little Falls, and again below Amsterdam (though less marked) is thought to be due to the dumping of such matter into the stream below those places. Several more or less complete series have been taken on the portion of the river from Schenectady to Cohoes. An ingenious method of preparing the necessary "plates" on the spot where a sample is taken was devised by the field party, and obviated the necessity of carrying the samples any distance or changing the conditions of the water in any degree before treatment. Little or no allowance is, therefore, to be made for such changes in condition with the consequent possible changes in number of bacteria.

Two sets of samples were taken from the Hudson river at intervals of one to two miles from the water-works intake at Waterford to Van Wie's point below Albany, one on an ebb tide and one on a flood tide, a sample being taken at each place at a point about one-fourth the distance across the stream from each side. These series were taken in the morning. A partial series from Albany to Van Wie's point was taken on a flood tide in the main channel, and a full set, samples being taken each side of the center of the river, was taken on an ebb tide from the water-works intake at Albany to Coxsackie. These series were taken in the afternoon. Two cultivations were made from each sample, and the average of the two results is plotted on the series of curves accompanying the report. From a study of these curves, with a knowledge of the sources of pollution, obtained from the report of the inspection by the engineer, valuable inferences may be drawn.

Variations in the condition of the river are so frequent and great, owing to changes in direction of current and in amount of flow, that no definite conclusions can be drawn from the series taken. The same remark applies to the Mohawk. The present series gives but one set of conditions, yet a [illegible] for future work. An effort has been made to eliminate variable quantities, and the set taken is probably the simplest possible, showing the condition of the rivers at a low stage unaffected by recent rains, and of the Hudson on both tides and in both morning and afternoon.

The results of this first series are published with the belief that they will justify the method of investigation begun, and show clearly the desirability of extending the investigation of the rivers upon the same line under varying conditions. Many special questions have arisen in the course of the work, which it is desirable to investigate, and the specialists in the employ of the Board are now at work upon some of them. The rate of progress must depend largely upon the amount of money available for the purpose, but time is also necessary that the conditions desired for the special investigation may be obtained.

Much the greater proportion of the bacteria found are entirely harmless in character; in fact, may be beneficial, but observations show (as the curves indicate and as would be expected) that the number of bacteria which are most abundant in sewage, is largely increased at sources of direct pollution. The discovery of bacteria which are peculiar to sewage is not the discovery of pathogenic bacteria. The conditions favorable to their occurrence are not yet satisfactorily determined, and this is one of the problems now under investigation. The examination of samples of water from the intake of the water-works at Albany and Schenectady, to determine the character of the bacteria, has been carried on as opportunity offered since December, 1890, and the presence of large numbers of sewage bacteria in both has been demonstrated. The report of Dr. Smith gives the results of this kind of work on the Hudson river, at Albany. It is of the greatest importance that it should be carried on in detail and as thoroughly as possible.

The numbers of bacteria in a comparative series may be taken as a measure of the comparative amount of recent pollution; further than that the present investigations do not warrant conclusions. The study of species is comparatively new, and much time is necessary to determine the character and method of action of the many species not yet catalogued. To secure the best results a trained observer should be set at work and permitted to occupy his whole time, with all the apparatus and materials necessary in these and allied investigations. The investigation of the large class of diseases now attributed to the action of pathogenic bacteria, some of which are communicable from animals, is of the same general nature. Work, worth many times its cost from an economic point of view, is ready to occupy the time of such a specialist, were there sufficient funds to warrant his employment.

Food and Drugs.

The laboratory work of the Board has been growing in importance year by year. Beginning with a corps of analysts located in various parts of the State, the Board has been gradually concentrating its work, which was at first necessarily scattered, till at length it has its own laboratory under its immediate supervision in Albany, with Dr. Willis G. Tucker at its head as director and a corps of trained assistants under him. Although it lacks much that is necessary for an ideal laboratory, with which the Board has been unable to equip it for want of means, yet a beginning has been made capable of expansion in proportion as the resources of the Board and the exigencies of the service warrant development.

During the past year the food and drug work has been gradually extended; new territory covered; a much larger number of samples collected and examined than ever before, and an important result accomplished, more particularly in improving the quality of the drugs sold throughout the State. The work continues to receive the approval of leading manufacturers and of the pharmaceutical and medical journals. It is desired to extend the scope of the laboratory work to cover not merely the exposure of falsifications and adulterations in food and drug articles, but in directions pertaining to sanitary science and the public health, in which field it is already proving itself a valuable adjunct to the important work intrusted to the Board. Chemical analysis of the waters of the Hudson river and its tributaries are now being made in connection with the sanitary inspection of this watershed

Report of the Executive and Finance Committee.

Traveling and Necessary Expenses of Members.

1890.				
Oct.	28.	Lewis Balch, secretary	$37	11
Nov.	9.	Lewis Balch, secretary	39	40
	10.	Frederick Carman	19	45
	28.	Lewis Balch, secretary	33	65
	28.	Frederick Carman	17	05
Dec.	4.	F. O. Donohue	78	66
1891.				
Jan.	6.	Maurice Perkins	157	81
	21.	Lewis Balch, secretary	53	37
	21.	Frederick Carman	25	50
	28.	Florence O. Donohue	47	54
	28.	Maurice Perkins	24	93
Feb.	10.	Frederick Carman	16	65
	12.	Lewis Balch, secretary	19	80
	24.	Thomas Newbold	66	40
April	6.	Thomas S. Dawes	44	00
	21.	Frederick Carman	16	29
	21.	Lewis Balch, secretary	25	20
May	11.	F. O. Donohue	113	51
	11.	Lewis Balch, secretary	64	85
	16.	Lewis Balch, secretary	19	90
	16.	Frederick Carman	20	80
June	1.	Maurice Perkins	44	48
	2.	Frederick Carman	28	10
	2.	Lewis Balch, secretary	47	91
	4.	William E. Milbank	36	90
	12.	F. O. Donohue	65	24
	16.	Lewis Balch, secretary	24	16
	16.	Maurice Perkins	22	96

1891.			
July	8.	Maurice Perkins	$35 30
	8.	Lewis Balch, secretary	43 34
	9.	W. E. Milbank	15 38
	21.	Frederick Carman	17 50
Sept.	10.	Lewis Balch, secretary	20 65
	10.	Frederick Carman	14 45
	18.	Everett House	7 15
	18.	Thomas S. Dawes	42 00
	18.	F. O. Donohue	50 95
	29.	Frederick Carman	15 35
	29.	Lewis Balch	33 54
			$1,507 14

Special Expert and Temporary Service.

1890.			
Oct.	2.	M. L. Edwards, typewriting and registering	$103 68
	2.	Grace B. Winne, indexing, etc	72 20
	9.	Edward B. Jones, office assistance	25 00
	29.	Charles C. Brown, engineering services	222 45
Nov.	5.	M. L. Edwards, typewriting and registering	138 90
	3.	Grace B. Winne, indexing, etc	77 04
Dec.	1.	Grace B. Winne, tabulating	70 80
	1.	M. L. Edwards, typewriting and registering	102 30
	1.	Richard Dumary, sorting death certificates	88 35
	5.	Arthur Hollick, services as expert	45 55
	11.	Charles C. Brown, engineering services	144 37
	11.	Dr. F. C. Curtis, investigating diphtheria,	14 48
	30.	Grace B. Winne, indexing etc	77 60
	31.	Thomas S. Jones, Jr., office assistance	25 00
1891.			
Jan.	1.	M. L. Edwards, registering and typewriting	166 30

1891.

	5.	Richard P. Dumary, sorting certificates ..	$94 20
	10.	John Brennan, removing boxes	3 60
	10.	Myron H. Ottman, removing boxes......	3 60
	21.	F. C. Curtis, investigating small-pox.....	10 50
	27.	Thomas Robinson, for meteorological data,	20 00
	28.	William Buchanan, for building partition in Bureau of V. S....................	15 00
	31.	Grace B. Winne, tabulating............	72 00
Feb.	3.	Richard P. Dumary, sorting certificates..	84 60
	3.	M. L. Edwards, typewriting and registering	80 88
	10.	Arthur Hollick, expert services	12 70
	24.	T. M. Prudden, biological analysis.......	50 00
Mar.	3.	M. L. Edwards, registering and indexing..	61 50
	9.	Charles C. Brown, engineering services..	137 14
	9.	Richard P. Dumary, boxing and marking certificates	19 80
	28.	Grace B. Winne, tabulating and indexing,	81 68
April	8.	M. L. Edwards, registering and indexing,	84 00
May	1.	Grace B. Winne, tabulating and indexing,	72 00
	11.	Richard P. Dumary, sorting certificates..	71 70
June	1.	Grace B. Winne, indexing, etc..........	74 88
	2.	M. L. Edwards, indexing, registering, etc.,	174 00
	2.	Richard P. Dumary, sorting certificates..	96 90
	4.	Thomas S. Jones, extra work	62 00
	12.	Charles C. Brown, engineering services..	260 86
	16.	Edward B. Jones, temporary assistance..	17 50
	16.	Peter J. Halpen, temporary assistance...	30 00
July	1.	F. C. Curtis, investigating diphtheria....	17 22
	1.	Grace B. Winne, indexing, etc..........	84 00
	1.	Richard P. Dumary, sorting certificates, etc	105 30
	2.	M. L. Edwards, indexing, registering, etc.,	113 28
Aug.	1.	Grace B. Winne, indexing, etc..........	81 00
	5.	Richard P. Dumary, assorting certificates, etc	98 70

1891.			
	12.	Charles C. Brown, engineering services ..	$46 34
	20.	Richard P. Dumary, assorting certificates, etc	63 30
Sept.	2.	Grace B. Winne, indexing, etc..........	84 80
	2.	M. L. Edwards, registering, etc.........	145 16
	10.	F. C. Curtis, investigating diphtheria and typhoid fever	66 37
	28.	Charles C. Brown, engineering services..	102 27
			$4,072 80
July	18.	Charles C. Brown, engineering services..	92 48
			$4,165 28

Salaries and Wages.

1890.			
Oct.	31.	Salaries for month of October..........	$1,150 00
Nov.	30.	Salaries for month of November........	1,150 00
Dec.	31.	Salaries for month of December.........	1,150 00
1891.			
Jan.	31.	Salaries for month of January..........	1,150 00
Feb.	28.	Salaries for month of February.........	1,150 00
April	30.	Salaries for month of April	1,150 00
Mar.	31.	Salaries for month of March	$1,150 00
May	31.	Salaries for month of May	1,150 00
June	30.	Salaries for month of June	1,150 00
July	31.	Salaries for month of July	1,150 00
Aug.	31.	Salaries for month of August	1,150 00
Sept.	30.	Salaries for month of September	1,150 00
			$13,800 00

Extras.

1891.			
July	1.	Thomas F. Greeley	$111 00
Aug.	1.	Thomas F. Greeley	108 00
Sept.	1.	George T. Church	108 36

1891.		
	1. Thomas F. Greeley	$112 20
	30. Thomas F. Greeley	111 00
	30. George T. Church	125 00
		$675 56
	Grand total	$14,475 56

Printing and Stationery.

1890.		
Oct.	20. Fergus Halpen, printing envelopes, etc	$34 50
1891.		
Feb.	24. James B. Lyon, printing report on Barren island	241 15
Mar.	21. Fergus Halpen, printing envelopes, etc	32 50
	21. Messrs. Quayle & Co., steel plate printing,	16 00
Aug.	10. Messrs. Quayle & Co., steel plate printing,	16 96
	10. Messrs. Charles Van Benthuysen & Son, printing bulletins, circulars, record books and registers	369 79
Sept.	10. Frederick C. Manning, steel plate for letter heading	100 00
	10. Frederick C. Manning, printing	24 00
	29. The Argus Company, printing	363 50
	29. James B. Lyon, printing, etc	112 20
		$1,310 60

Telegraphy and Telephone.

1890.		
Oct.	7. Hudson River Telephone Company	$5 00
	7. Western Union Telegraph Company	6 31
Nov.	12. Western Union Telegraph Company	1 67
	12. Hudson River Telephone Company	5 55
Dec.	1. Hudson River Telephone Company	5 00
	5. Western Union Telegraph Company	3 15

1891.			
Jan.	5.	Western Union Telegraph Company....	$4 11
	6.	Hudson River Telephone Company	5 25
Feb.	3.	Hudson River Telephone Company	5 20
	10.	Western Union Telegraph Company	5 10
Mar.	3.	Hudson River Telephone Company	5 10
	6.	Western Union Telegraph Company	12 20
April	6.	Hudson River Telephone Company	5 10
	21.	Western Union Telegraph Company	1 67
May	11.	Western Union Telegraph Company	8 65
June	4.	Western Union Telegraph Company	7 77
	4.	Hudson River Telephone Company	5 60
July	1.	Hudson River Telephone Company	5 00
	18.	Western Union Telegraph Company ..	11 28
Aug.	12.	Hudson River Telephone Company	9 65
Sept.	2.	Hudson River Telephone Company	8 00
	10.	Western Union Telegraph Company	1 71
	10.	Western Union Telegraph Company	2 63
			$130 70

Library, Maps and Charts.

1891.			
Jan.	6.	Engineering News	$5 00
	8.	The Sanitarian	4 00
	28.	B. Westerman	11 80
Feb.	3.	B. Westerman	7 00
	3.	B. Quinn	5 00
	24.	Journal of Comparative Medicine	3 00
June	17.	Sampson, Murdock & Co	3 00
July	13.	D. Appleton & Co	20 00
Aug.	10.	John Skinner	1 80
Sept.	29.	B. Westerman	9 91
			$70 51

Furniture.

1890.			
Nov.	12.	T. F. Romeyn	$37 00
1891.			
Feb.	24.	T. F. Romeyn	60 00
July	18.	W. M. Whitney	4 50
"	27.	Stuart G. Speir	41 00
			$142 50

Petty Cash.

1890.			
Nov.	14.	S. G. Speir	$12 76
Dec.	22.	Albany News Company	1 50
1891.			
Feb.	24.	T[illegible]ang Manufacturing Company	7 55
March	3.	S. G. Speir	2 00
July	16.	John Ferris	1 40
			$25 21

Food and Drug Account.

1890.			
Oct.	7.	Willis G. Tucker, salary and expenses for September	$175 55
	7.	G. C. Caldwell, salary for September	166 66
Nov.	11.	G. C. Caldwell, salary and expenses for October	188 67
	11.	Willis G. Tucker, salary and expenses for October	170 90
Dec.	3.	Willis G. Tucker, salary and expenses for November	173 52
	5.	G. C. Caldwell, salary and expenses for November	203 94
1891.			
Jan.	5.	G. C. Caldwell, salary and expenses for December	192 97
	6.	Willis G. Tucker, salary for December	166 66

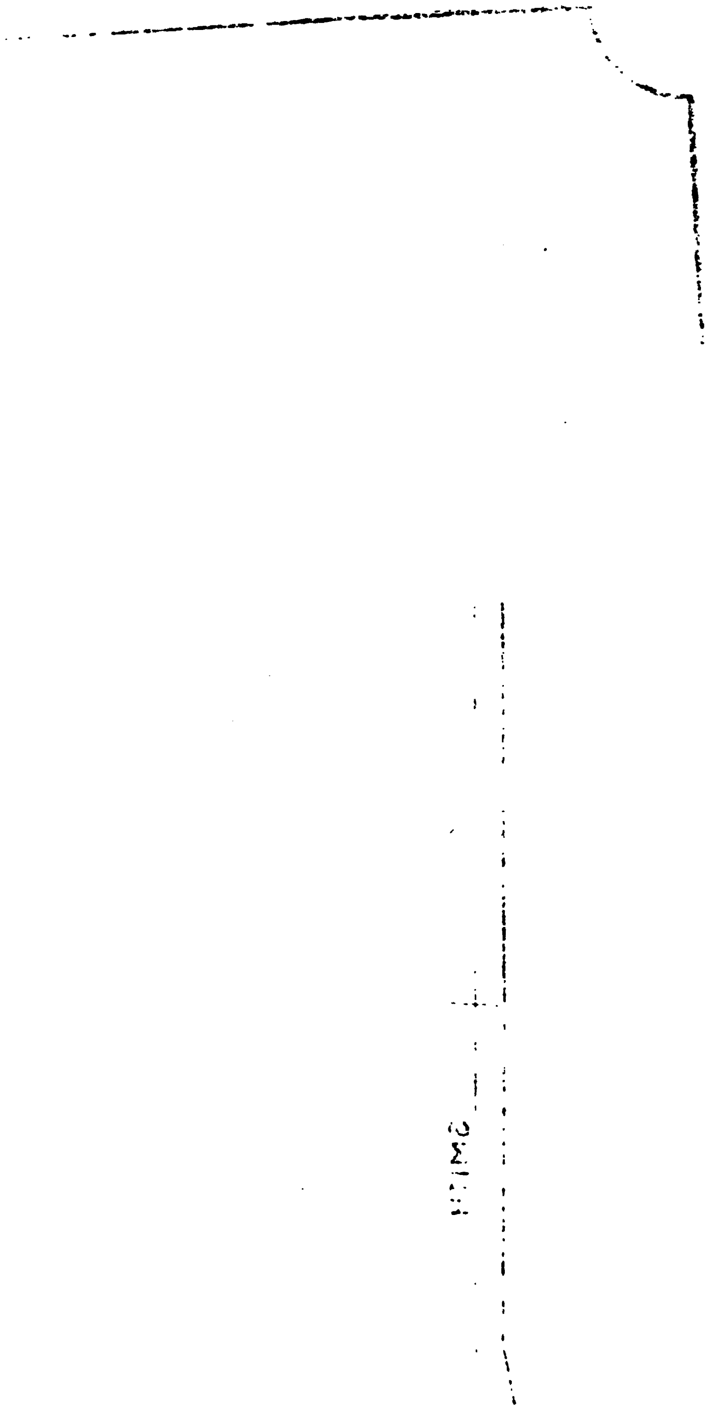
1891.		
Feb.	3. Willis G. Tucker, salary and expenses for January	$173 25
	3. G. C. Caldwell, salary for January	166 66
March	6. G. C. Caldwell, salary and expenses for February	203 61
	6. Willis G. Tucker, salary and expenses for February	175 58
	9. Chas. C. Brown, investigating Hudson river water supplies	172 69
April	6. Willis G. Tucker, salary and expenses for March	176 85
	6. G. C. Caldwell, salary for March	166 66
May	11. Willis G. Tucker, salary and expenses for April	172 85
	11. G. C. Caldwell, salary and expenses for April	202 19
June	4. Willis G. Tucker, salary and expenses for May	183 84
	4. G. C. Caldwell, salary and expenses for May	198 71
	12. C. C. Brown, Mohawk and Hudson river investigation	143 86
July	11. Willis G. Tucker, salary and expenses for June	200 40
	18. C. C. Brown, Hudson and Mohawk river investigation	142 93
	18. James H. Stoller, biological investigation Hudson river	54 30
	21. Theobold Smith, bacteriological investigation	160 07
	21. G. C. Caldwell, services for June	166 66
Aug.	5. W. G. Tucker, expenses and salaries of State laboratory	378 52
	12. Chas. C. Brown, Mohawk and Hudson river investigation	191 93

1891.			
	12.	James H. Stoller, bacteriological investigations	$136 35
Sept.	10.	James H. Stoller, bacteriological investigations	113 93
	10.	W. G. Tucker, expenses and salaries of State laboratory	301 23
	28.	Charles C. Brown, Mohawk and Hudson river investigation	97 95
			$5,519 89

CLASSIFIED STATEMENT OF MONEYS PAID FOR EXPERT AND TEMPORARY SERVICE.

M. L. Edwards.	R. P. Dumary.	G. B. Winne.	Charles C. Brown.
$138 90	$88 35	$72 20	$222 45
102 30	94 20	77 04	144 37
166 30	84 60	70 80	137 14
80 88	19 80	77 60	260 86
61 50	71 70	72 00	46 34
84 00	96 90	81 68	102 27
174 00	105 30	72 00	....
113 28	98 70	74 88	....
145 16	63 30	84 00	....
103 68	....	81 00	....
....	....	84 80	....
$1,170 00	$722 85	$848 00	$913 43

SEWERAGE AND DRAINAGE.



SEWERAGE AND DRAINAGE.

SEWERAGE AND DRAINAGE.

PLANS

FOR THE

Sewerage and Drainage of Rouses Point.

The following plans for the sewerage and drainage of the village of Rouses Point were approved:

PLANS

FOR THE

Sewerage and Drainage of Wellsville.

Plans for the sewerage and drainage of the village of Wellsville were presented to the Board, accompanied by reports of the village engineer and a letter from the engineer of the Board. These reports follow, and the map of the village, showing the proposed plan accompanies them. The plans were approved.

REPORTS OF THE VILLAGE ENGINEER.

1. Report on Sewers.

To JOSEPH S. NORTON, *President*, and W. H. DAWSON, MAURICE O'CONNOR, NICHOLAS RAUBER and HIRAM J. TORREY, *Members of the Board of Sewer Commissioners for the Village of Wellsville, N. Y.:*

Gentlemen.— Having completed the surveys of the village for a sewerage system, I hereby submit the following report, in connection with map and profiles.

The map shows the general formation of the surface of the village, by contour lines, drawn through points of equal elevation throughout the plan, representing the features of the surface by a system of horizontal, curved lines. The figures accompanying these lines denote the altitude in feet above tide-water. It shows the location and alignment of all the streets in the corporation, with the lines of sewers upon each.

The direction of the flow of sewage denoted by arrows alongside the sewer lines; the sizes of sewers given in inches. It shows the location of man-holes, flush-tanks, lamp-holes and catch-basins, the location of the deepest cellars, etc.

Objects such as are not explained in their location are designated by symbols, which are explained upon the margin of the map.

The map is drawn on the scale of one inch equal 160 feet.

The profiles show the present surface of the streets by the black shaded lines. The grade of the sewers (center line) by the full black line underneath, accompanied by figures denoting the elevation in feet and decimals above tide-water, and are given at changes of incline of the sewers, or at connection with other sewers.

The grade is denoted by the ratio of one foot to a given distance. And the length of sewers of one grade or of one size is given in feet, upon the lower line. The grade established for the surface of the streets is denoted by the red line and the red figures accompanying said line denote the elevation of change of grade. Symbols are used (differing from those upon the map) an explanation of which appear upon the margin. The profiles are scaled one inch to one hundred and sixty feet horizontally (same as with map) and vertically one inch to thirty feet.

From a consideration of the contours and profiles, it will be observed that the topography of the village makes it possible to obtain an economical system of sewerage and drainage.

Much attention has been given to the subject of surface drainage, with a view of eliminating the storm-waters from the sewers, thus saving a large item in sizes and cost of pipe. Special reports upon surface drainage heretofore submitted and adopted by your board, should be used in connection with this report.

I find that the village has an area of 1,297 acres of land; sixteen and one-half miles of streets, and a population of 4,000, round numbers.

The topography necessarily divides it into two sewer districts, the Genesee river marking the line of separation. For the east side of the river it is proposed to use the "separate system." That is, the system shall admit of all house sewage, including cellar drainage, but excluding roof and surface water. The system on the west side of the river differs in that the outlet is charged with the double duty of sewerage and drainage, and is to receive some surface water from the territory lying directly west of it, the same to be discharged directly into it, through the street gutters, but this is not to apply to any other sewer line (see report "Brooklyn" side of the river).

The outlet for the west side of the river is designed to make its discharge directly into the river at a point below any present settlement near the river.

The present population of this district is about 1,000, but the amount of sewage to come into this outlet, for some time to come at least, is likely to be small, and could have but little effect upon the waters of the river, besides I can not learn that the river is used for potable purposes, at least, for many miles below the village. But should the discharge prove to be a nuisance at any time, the lower portion of the outlet may be changed so as to discharge in tanks at the foot of Factory street, and by means of pumping conveyed to the disposal plant for the east-side system upon the opposite side of the river.

The district upon the east side of the river has, of the area heretofore mentioned, about 925 acres, with ten and one-half miles of streets and a population of 3,000.

For this district a system of disposal by some method of purification is proposed, but, in view of the uncertainty of the immediate necessity for its erection, coupled with the fact that there are so many devices for purifying sewage, many of which are new inventions, with their merits as yet experimental, I have deemed it advisable to recommend the delay of a choice until such time as the plant may be needed, and a more intelligent idea of what the needs of the village may require, when such plans and specifications may be made that will receive the approval of the State Board of Health and become a part of the system. I have selected for the site of such disposal works a point on the river bank about 250 feet north from Genesee street, and where the river leaves the high bank of land.

To this point I have run two outlets, one for the discharge of sewage from the "west end" of the district, and this I have designated the "west end outlet," and one the "main outlet," which will discharge all the sewage of this district lying south of Genesee street.

For economy these outlets must be independent lines. The "west end" outlet begins at the junction of Martin with Main street, and crosses the land of Mr. E. C. Bradley to the disposal works.

The main outlet begins on Main street at a point southerly from the Dyke's creek bridge and runs northeasterly to cross the creek near the railroad bridge; thence down the north bank of the creek to Main street again; thence along Main street to the point of intersection of the south line of Gt. Lot No. 3 of the Willing and Frances tract of land with Main street; thence along the bank which divides the raised land from the flat to the bank of Dyke's creek; thence down the bank of said creek and the bank of the Genesee river to the disposal works.

The loop formed in the line at the creek crossing is made necessary to save either a syphon or the damming of the stream to support the pipe at grade with a crossing made at a lower point in the stream.

This outlet must have a low grade in order to accommodate tankage above the river at the disposal plant and at the same time have it serve as the outlet for the territory south of Dyke's creek, hence numerous inlets should be provided for cleaning and the inspection of it. A gate should be arranged at the creek crossing (north side), also one at Main street where the outlet leaves the creek bank, to let the creek into the outlet for flushing.

The simple device of a pipe leading from the creek to the sewer, with the use of a Ludlow, or similar, gate-valve will do the business.

I would also recommend the use of the Rhodes and Williams automatic siphon for flushing, one to be set at State street and one at Pearl street.

At the crossing of the creek I would recommend a stone wall laid in hydraulic cement for the support of the pipe (iron). That the pipe be laid in the wall so that it shall be entirely covered with masonry, and that the lower side of said wall be raised above the rest of it, so as to form a low dam thus setting back the water to cover the portion holding the pipe as a protection against frost.

In a few instances I have connected sewers by lines across private property, the advisability for so doing will appear by reference to the plans.

The two tanneries upon the south side of Dyke's creek discharge about 60,000 gallons in twenty-four hours. Provision is made for this discharge through the system.

In estimating a possible future growth in population I have been governed largely by the availability of the different sections for village purposes. Much of the land of the corporation is practically waste, at least for populous purposes; especially is this true of the bottom land along the river as well as the high land on the outskirts. But in order to provide for sufficient pipe capacity for possible future demands, I have estimated an addition of twenty-five per cent to the present length of street lines, for the whole village, and divided this percentage proportionately to each sewer division, as, in my judgment, it would come into use as above stated, and then used the basis of a house to every fifty feet front, as if the whole street lines of the village were built up to that extent.

Eight-inch pipe has been adopted for the minimum size, although smaller pipes would meet the requirement in many instances.

You will observe by a glance at the map that the "two sewer districts" are divided into several smaller or subdistricts, having their discharge through trunk lines into the outlet at different points.

The following table, in connection with the map, will show the classification of the districts, with the size of pipe for each sewer and the length of each. The figures in the last column, opposite the sewer named, denote the total amount of lineal feet of line, the sewage from which the trunk sewer must carry (including its own).

For sewer district, west side of Genesee river, through Chamberlain street trunk line:

Streets.	Eight-inch. Feet.	Ten-inch. Feet.	Total. Lineal ft.
Howard	1,045	......	......
Seneca	580	670	2,298
Seneca	418	......	......
Howard	360	......	......
Chamberlain	......	856	3,932
Total	2,403	1,526	......

SEWERS LEADING DIRECT TO OUTLET.

STREETS.	Eight-inch.	Eighteen-inch.	Twenty-four inch.	Lineal feet.
	Feet.	Feet.	Feet.	
Clark	800	......	......	......
Pine	1,086	......	......	......
High and State	2,450	......	......	......
Earley	1,240	......	......	......
Stevens and High	2,712	......	......	......
Stevens	480	......	......	......
Outlet	......	2,200	800	......
Total	8,768	2,200	800	11,768

Through the trunk lines of West Main and Chamberlain streets.

Streets.	Eight-inch. Feet.	Ten-inch. Feet.	Total. Lineal ft.
King	750	......	......
Pine	600	......	......
State	920	......	......
West Main	1,983	710	4,963
Factory	......	728	5,951
Chamberlain	......	856	6,807
Total	4,513	2,294	......

Summary for the west side district:

	Lineal ft
Twenty-four-inch outlet	800
Eighteen-inch outlet	2,200
Ten-inch sewer	3,820
Eight-inch sewer	15,687
Total	22,507

For the east side of the river. To be discharged through the west end outlet.

Through the trunk line of Main street, south of the outlet:

Streets.	Eight-inch. Feet.
Genesee	702
Depot	500
Elm	500
Main	996
Total lineal feet	2,698

Through Martin street:

Streets.	Eight-inch. Feet.	Ten-inch. Feet.	Lineal ft.
Briggs	1,875	......	......
Line to connect with Farnum	730	......	......
Farnum	2,400	712	5,717
Martin	......	800	6,517
Total	5,005	1,512	......

Through the Trunk Line of Main Street, North of the Outlet.

Streets.	Eight-inch.	Ten-inch.	Twelve-inch.	Lineal feet.
	Feet.	Feet.	Feet.	
Coats	400	......	......	....
O'Connor	940	......	......	....
Putsman	430	......	......	....
Line connecting with Chestnut	1,259	......	......	....
Chestnut	......	800	......	3,829
Main	440	......	......	....
Oak	746	......	......	....
Lombard	680	......	......	....
Grove	450	......	......	....
Main	......	......	988	7,133
Outlet	......	1,100	......	17,448
Total	5,345	1,900	988	....

Summary for west end outlet:

	Lineal ft.
Twelve-inch pipe	988
Ten-inch pipe	3,412
Eight-inch pipe	13,048
Total	17,448

Main Outlet, From South Side of Dyke's Creek, Including all the Territory South of State Street.

Streets.	Eight-inch.	Ten-inch.	Twelve-inch.	Eighteen-inch.	Lineal feet.
	Feet.	Feet.	Feet.	Feet.	
Main	1,090	......	......	......	....
Line connecting with Rauber	885	......	......	......	....
Rauber	......	1,500	......	......	3,475
Main	240	......	......	......	3,715
Hanover and Osborn	1,600	......	......	......	....
Main	.....	......	640	......	5,955
Dyke	1,958	1,990	......	......	....
Main	......	......	192	......	10,095
Broad	700	......	......	......	....
Main	450	......	......	......	....
Outlet to State	......	......	......	2,306	13,551
Total	6,923	3,490	832	2,306	....

MAIN OUTLET, THROUGH STATE STREET.

STREETS.	Eight-inch.	Ten-inch.	Twenty-inch.	Lineal feet.
	Feet.	Feet.	Feet.	
Harrison	700	......	......	....
Broad	640	......	......	....
State	1,790	640	......	3,770
Old sewer	......	1,400	......	....
Outlet to Mill	......	......	400	19,121
Total	3,130	2,040	400	....

Main outlet, through Mill street:

Streets.	Eight-inch. Feet.	Twent-inch. Feet.	Lineal feet.
Third	371	......	......
Line connecting with Second	335	......	......
Second	550	......	......
Harrison	200	......	......
Furnace	400	......	......
Main	910	......	......
Jefferson lane	280	......	......
Mill	1,116	......	4,162
River	315	......	......
Outlet to Pearl	....	1,028	24,626
Total	4,477	1,028	......

MAIN OUTLET, THROUGH PEARL STREET.

STREETS.	Eight-inch.	Ten-inch.	Twenty-inch.	Lineal feet.
	Feet.	Feet.	Feet.	
Lee avenue	280	......	......	....
Pearl	231	......	......	....
Harrison	400	......	......	....
Madison	2,441	90	......	3,442
Jefferson	600	......	......	....
Broadway	......	660	......	4,702
Briggs	1,040	......	......	....
Third	550	......	......	....
Pearl	1,607	670	......	8,569
Main	530	......	......	....
Pearl	......	380	......	9,479
Outlet to disposal works	......	.....	735	34,840
Total	7,679	1,800	735	....

Summary for main outlet:

	Lineal ft.
Twenty-two-inch outlet	735
Twenty-inch outlet	1,428
Eighteen-inch outlet	2,306
Twelve-inch sewer	832
Ten-inch sewer	5,930
Eight-inch sewer	22,207
Total	33,440

RECAPITULATION.

	Twenty-four-inch.	Twenty-two-inch.	Twenty-inch.	Eighteen-inch.	Twelve-inch.	Ten-inch.	Eight-inch.
	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
West side district	800	....	.....	2,200	.....	3,820	15,687
West end outlet	....	....	.....	.....	988	3,412	13,048
Main outlet	....	735	1,428	2,306	832	5,930	22,209
Total	800	735	1,428	4,506	1,820	13,162	50,944

Total line of sewers, 73.395 feet — 13.9 miles.

Estimate of "Y" branches, etc.:

Eight-inch branches	575
Ten-inch branches	155
Twelve-inch branches	18
Eighteen-inch branches	18
Twenty-two-inch branches	13
Man-holes	108
Flush-tanks	53
Lamp-holes	16
Catch-basins	12

The adoption of the general specifications for the construction of the system, giving the requirements regarding the material to be used, the manner of construction, etc., is herewith recommended as follows:

1. Engineer.

All the work must be done under the direction of the engineer in charge and subject to his approval, or his authorized assistant or superintendent.

2. Monuments.

Great care should be used when excavating the streets to preserve the location of land monuments. Whenever a monument is liable to be disturbed, its exact location should be determined, with reference to surrounding objects for witnesses, and should be replaced in accordance therewith, after the sewers have been properly laid, and the ditch back filled. Such work should be done by the engineer in charge, and in the presence and with the assistance of the local surveyors of the village.

3. Excavation of Ditch.

The ditch shall be excavated along the line designated by the engineer, and according to the depths given by him. The engineer may order any ditch sheeted or braced that he may deem necessary. The width of the ditch on bottom must be at least one foot greater than the outside diameter of the pipe.

If the bottom of the ditch be found too soft dig that portion deeper and fill to the grade with gravel. If springy and fills with water, dig a small well or pit below the grade to drain into, where it may be pumped out.

4. Sewer Pipe.

All pipes used shall be of the best quality of vitrified, salt-glazed pipe of the manufacture ordered by the board of sewer commissioners, and not less than three feet in length.

All "Y's" and other specials shall not be less than two feet in length and of the same quality and manufacture of the plain pipe.

All pipe should be tough, straight, without warps and free from fire cracks, and should be glazed uniformly inside and out, and when struck, should give a clear metallic sound.

No pipe shall be used that has a piece broken from the spigot end deeper than one and one-half inch, or longer, measured in the middle of the fracture, than one-fourth the diameter of the pipe. Should the broken piece be at the bell end, the pipe must be rejected if the fracture extends into the body of the pipe, or if its length, measured as above, is greater than one-sixth the diameter of the pipe.

The engineer shall determine to what extent fire cracks and blisters are injurious to the pipe.

All hubs or sockets must be of sufficient diameter to receive to their full length the spigot end of the next following pipe or special without any chipping, and to leave a space of not less than one-eighth of an inch all around for the cement-mortar.

The depth of the hub of any pipe shall be at least one inch greater than the thickness of the pipe.

5. Cement.

All cement must be of the best quality of Portland or Rosendale. Portland to have a tensile strength after twenty-four hours of 120 pounds to the square inch and Rosendale sixty pounds to the square inch. Rosendale to be used in dry ditches and Portland in wet.

Samples may be taken from each barrel for testing should the engineer so direct.

6. Sand.

To be sharp, rather coarse than fine, and free from clay or loam.

7. Mortar.

Mortar for brick work shall consist of one part of cement and two parts of sand mixed dry. Only pure cement should be used in jointing pipes.

No cement must be retempered before use.

8. Brick.

All bricks should be hard burned so as to give a clear ring when struck together. No half or broken brick shall be used.

9. Oakum.

May consist of manilla, flax or hemp. Must be twisted in the form of a loose rope.

10. "Y" Covers.

"Y" covers must be of galvanized iron and cut to fit the bell of the "Y" loosely.

11. Iron Pipes and Castings.

All iron pipe must be without flaw or defect, save that minor defects which may be laid at the top or do not effect the strength or tightness of the pipe, may be allowed.

Iron castings must be free from flaw or defect, true form and full weight for the purposes for which they may be used.

Iron pipe should be laid at all railroad crossings and such other points as the engineer may direct, and shall be laid caulked joints.

12. Pipes to be Laid on Full Beds.

Before each pipe is laid, the bottom must be excavated under its end to receive the socket, so that the whole length of the pipe will lie firmly on the graded bottom of the ditch. After the joint has been cemented, this excavation must be filled with sand or dry earth to support the cement firmly in its place.

13. Pipe Laying.

No pipe shall be laid except in the presence of the engineer or his authorized assistant. All pipe must be laid in straight lines, unless otherwise ordered by the engineer, and the engineer shall direct the use of such means as he may deem proper for laying the pipe properly to the grade. The pipes and specials shall be so laid in the trench that after the sewer is completed the invert thereof shall conform accurately to the grades and alignment given by the engineer. The sewers will be divided by man-holes and lamp-holes, into a number of divisions, in each of which the grades and alignments shall, under most circumstances, be truly straight. Changes of grade and alignment, or both, will generally be made at man-holes and lamp-holes.

In wet trenches the joints shall be made of a gasket of oakum, caulked into the bell with clear cement, pressed around the entire circumference by hand to prevent the entrance of cement into the interior of the pipe, and made perfectly water tight by completely filling out the entire space between the exterior of the spigot and interior of the hub with cement. The outside joint must be neatly beveled and the inside joint must be smoothed to an even surface with the interior of the pipe. Rosendale cement shall be used in jointing pipes in dry ditches, but Portland shall be used in wet ditches.

Iron pipes shall be laid with lead joints and be tight under the pressure at which they will be used.

The earth must be filled in half way up the sides of the pipe, carefully tamped around and under; no rock or large pebbles must be placed against the pipe. After the earth has been tamped around the pipe it shall be filled in to the depth of two feet and pounded or flooded as the engineer may direct.

14. "Y" Branches.

"Y" branches shall be placed wherever the engineer may direct. They shall be closed with a sheet-iron cover, plastered with an inch of cement.

observed by the contractor, he holding himself personally amenable for any disregard or violation of them by his employes or agents. The contractor shall provide for all water-courses and drains interrupted during the progress of the work, and replace them in as good condition as when he found them.

In digging about the gas or water pipes, the contractor must exercise special care and if injury is caused, the cost of repairing must be paid by the contractor.

The contractor shall, in the employment of labor, for both skilled and common workmen, give preference to citizen residents of the village.

All the work contemplated by these specifications shall be done to the satisfaction of the board of sewer commissioners and the engineer, and all materials and workmanship of whatever description, furnished and performed by the contractor, shall be subject to the inspection and rejection of said board and engineer.

Whenever unfaithful or imperfect work is discovered, it shall be corrected and repaired, immediately upon the requirement of the said board, notwithstanding it may have been passed over or overlooked by the inspector.

The inspection of the work is not intended to relieve the contractor from any of his obligations to perform sound and reliable work as herein described.

Respectfully submitted.

R. H. LEE,
Village Engineer.

WELLSVILLE, N. Y., *July* 16, 1891.

On motion of Commissioner Dawson: It was

Resolved (By unanimous vote), That the report of R. H. Lee, engineer of the sewer commission of the village of Wellsville, N. Y., be and is hereby accepted and adopted as the sense of this commission, and as such shall guide and govern the building of sewers for said village.

JOSEPH S. NORTON,
President.

EDWIN D. CLARK,
Clerk.

2. REPORTS OF VILLAGE ENGINEER ON DRAINAGE.

General Report.

To the President and Members of the Board of Sewer Commissioners of Wellsville, N. Y.:

Gentlemen.— The subject of surface drainage has been an important feature in my labors of preparing plans for sewerage and drainage, and inasmuch as drainage is designed to be made a separate system from that of sewerage, I have deemed it advisable to make a separate report upon this branch of my duties.

I find that the village is quite well located for an inexpensive system of surface draining, lying as it does upon both sides of the Genesee river, as well as Dyke's creek, and naturally draining in quite direct lines into these streams.

With the exception of some five low, marshy places, which require outlets (see former detailed reports), it can in most part have the discharge of its storm-water through the customary channel of street gutters, but to accomplish a system of drainage such as we propose, by the use of street gutters, would require a proper grading of the streets, which perhaps in itself is outside of your jurisdiction and belongs to the other tribunal, the village board of trustees. There should be a concert of action between that board and yourselves.

I have made a survey of the whole village, and have taken elevations at every fifty feet or oftener, upon the line of streets as well as elevations of fields and dooryards, from which I have made a map or plan, showing by contour levels the formation of the ground of the village, as well as the alignment of streets and the location of village lots, etc. I have also made profiles of all the streets, showing their exact formation.

The black shaded line upon the profiles denotes the present surface of the center of the streets.

The full red line denotes the line of grade, to which the surface of the streets should be brought and the accompanying red figures, the elevation, in feet, above tide-water.

As the gutter grade, in most instances, bears the same relative position to the street surface, it will serve to show the alignment, incline, etc., belonging to the gutter.

The adoption of these grade lines would be beneficial in many ways, such as furnishing, relatively, a grade for buildings, sidewalks, fences, shade trees, etc. All of which should be permanently fixed by certain uniform and established grades. The great importance of this must be clear in the minds of all and the sooner it is made a fixed rule for such future work the better, and I would recommend that the subject be placed before the village board of trustees, with a view that they make an ordinance, adopting the grades upon these plans.

It is quite essential in making successful drainage, that the area of watershed be so divided as not to overtax any of the avenues for discharge, in times of heavy or long-continued storms, and in this particular the village is very fortunate, for upon each of the hillsides are located streets contiguous to the corporate limits, and having a parallel position with the hillsides, that can be made — generally speaking — to turn the water around the central portion of the village or be directed through it by some main outlet. This is a relief, which reduces the area to be provided for, to such an extent, with such divisions as we get by the streams, and the various changes of the general surface, as to fully accomplish the purpose.

The village seems to be divided into four natural drainage districts, and for convenience, I will treat upon them separately and designate them by numbers as follows: No. 1. That portion upon the west side of the river "Brooklyn side." No. 2. That lying upon the south side of Dyke's creek. No. 3. The east side of the river lying between Dyke's creek and a brook, which crosses Main street at the residence of A. A. Goodliff, and No. 4, all that portion north of the said brook.

District No. 1.— The physical outline of this district presents three conditions. First, a hillside; second, a level bench of land, and, third, a low depressed section, lying nearly level, with some portion of it, at times, below low-water mark. Upon the bench numerous springs crop out, which are probably fed from the hillside, and the low land frequently becomes saturated with water from the streams backing up through the soil in high water times or from overflows.

The geological formation leads me to believe that in each of the above cases the water has no circulation, that the earth absorbs what it can of it and that it remains there to make the soil water-logged. Where the subsoil is charged with fresh water and the water can have a circulation, no serious consequences will result to health, but where it becomes stagnant it is the enemy of life.

I have given this district a great deal of attention and my conclusion is that a portion of it should have sewer drainage, and with that view I have already submitted to you a special report "D," which I believe treats quite exhaustively the subject.

District No. 2.—This district seems to present no serious complications in the way of drainage. I only need to call your attention to one or two matters. 1. Main street at a point near the residence of George B. Jones, is interrupted by a valley, which makes a depression in the street causing the water to make its discharge at this point from both ways.

A new street, beginning at this point and running through said valley, and having a terminus at Rauber street, near the east boundary line of the corporation, is proposed. [illegible] the water at the point on Main street aforesaid, should follow the line of the new street to or near Rauber street and then be discharged into the ditch proposed for the drainage of the swamp on the east side of Main street and north side of Rauber street. (See detailed report marked "C.") 2. Dyke street has a level stretch of street surface from Osborn street to the junction of Main street and much complaint is made about the drainage. There should be a ditch leading from Dyke street to [illegible] creek, to cross the tannery land near the east end of the [illegible] tannery and continued as close as possible to the division line between the said tannery land and the lands of the [illegible] Railroad Company. Sufficient grade may be obtained for the gutter to carry the water to this outlet. It may also be used as the outlet for a portion of Dyke street along the front of the tannery. [illegible]

Surrounding the junction of Main and Dyke streets, the territory is almost a dead level and the condition of the streets in wet weather is very bad. It is impossible to maintain an open gutter at this point, owing to the cross travel necessary in transporting bark and tan to and from the tannery, and I would recommend sewer drains to run from the aforesaid street junctions to Dyke's creek along Main street.

District No. 3.— This district is the most populous and comprises the business portion of the village, and is excellently adapted to surface drainage. Its location is upon elevated ground and its formation that of a hog's back so as to slope in quite direct lines to both Dyke's creek and the river. Madison street, centrally located, marks a line of divide, the storm-water upon the south side of which, seeking a discharge in lines to the south and southwest of it, while those upon the north of it have a northwesterly direction. This formation makes it possible to get drainage through numerous outlets, thereby dividing the water so as not to overtax the capacity of the street gutters in carrying it off.

I think I need to call your attention to Third street only. This street, or that portion lying between Madison street and the summit, has a depression, the lowest point of which is just at the base of the hill and at the northerly corner of village lot owned by Louis Slough; this point in the street is some four feet lower than the junction of Third with Madison street, hence it seems necessary to provide an outlet for the discharge of the water at this point. This street, between Madison and State streets, receives the storm-water from a large section of outlying territory, and all the water is received between Madison street and the summit concentrates at the point above mentioned, and the failure to properly care for it has done much damage to private property. I would recommend that an outlet be made from this point to the elbow of Second street, near the Methodist church.

In district No. 4 we have, in Briggs street, a similar case to that of Third street, the lowest point of its depression being at about its intersection with the division line between the Willing and Francis and Schermerhorn tracts of land. This street has the burden of more storm-water from outlying territory than any other in the village, and the concentration of water that would come to this point in times of heavy rain, if confined to the gutter of this street, as it should be, would be immense.

The practice has been, however, to run the water in sections and turn it through sluice-ways upon the land on the lower side of it. This plan, together with the springs that crop out on the lower side of it, furnishes a flow of running water at all times, except in excessive dry weather, and promiscuous ditching has been resorted to to turn it from certain cultivated fields.

I would recommend a ditch of sufficient capacity to carry the water, say of three feet depth and four of width, to be made from the lowest point of depression, and to run in nearly a direct line to the open culvert through the Erie railroad embankment. It may be that we are putting more responsibility upon this street than a natural dirt-bottom gutter will bear. Nevertheless, the plan should be adhered to, though it be necessary to give it protection in way of a stone bottom.

The Erie railroad company, by its excavation and embankment through the village, has largely shut off the territory east of it from direct lines to the river, but provisions which have been made, in which the said railroad company have agreed to furnish a channel, along the line of the road to Dyke's creek, and also adequate openings near the depot, will furnish the necessary relief. (See detailed report "B.")

As to cases of draining of low lands and hollows, reference is made to former special reports, made and provided for in each case.

At street junctions, or at intersections of streets, many times the gutter of one makes a valley or depression of the surface of the other. Especially is this true where one street has a much greater incline than the other. In all such cases when the said depression would admit of a pipe of proper diameter to carry the water through, and that would lay so as to be below the grade surface, I would recommend the use of iron drain pipe.

It has been my purpose to call your attention to special features only, because I believe the maps and profiles illustrate the situation better than I can convey by use of words.

You will observe that no radical changes need be made, to obtain a uniform system of the grading of the streets; in most places the cutting of knolls or high places, and filling of depressions, accomplishes the purpose.

This work may be done from year to year, with the street fund, as each street may need repairs, and finally, when done, will keep in repair with much less expense than now required.

You will also notice that the provisions made for the discharge of waters in the suburban parts reduces to a comparatively small area the territory to be cared for through any continuous line of street gutters. And that every street grade has a continuous line of fall to some objective line of outlet, thus leaving no depressions in the streets for the water to leave the gutters to cross or take any unintended direction over private property. Permanent bench-marks have been established in the various portions of the village, the record of which will be filed in your office, from which the grade upon the plans may be maintained at their established position for all time.

Respectively.

R. H. LEE,
Village Engineer.

APRIL 13, 1891.

On motion of Commissioner Dawson:

Resolved, That the report of Engineer Lee, on surface drainage, be received and adopted as the sense of this commission, and be placed upon the minutes.

JOSEPH S. NORTON,
President.

EDWIN D. CLARK,
Clerk.

SPECIAL REPORT "A."

To JOSEPH S. NORTON, *President*, and MAURICE O'CONNOR, HIRAM J. TORRY, NICHOLAS RAUBER and WM. H. DAWSON, *Board of Sewer Commissioners of the Village of Wellsville, N. Y.:*

In the matter of a storm outlet for the discharge of drainage from the land on the north side of State street and lying just east of the Erie railroad lands in this village, I find that the storm-water from the hill on the east side of the railroad so much as has an outlet through the street gutters of Pearl, Jefferson, Madison and Mill streets, discharges its drainage on and along the land of the Erie railroad to the land in question. The said land slopes naturally towards the railroad and State street, and is rather low and marshy.

The Erie railroad company, in the construction of their road, excavated to considerable depth below the surface of ground, from about Jefferson street to Mill street, thus forming a canal or catch-basin, as it were, for the water from the aforesaid gutters, and the drainage being towards Dyke's creek, its discharge is upon this low land, and the water so discharged is confined to this hollow by being dammed in by an embankment of the said railroad at this point, as well as the raising of State street for approaches to the crossing of the railroad. Now, with no means of further discharge, this water remains there to become polluted, thus jeopardizing the health of the community surrounding it.

I think that the village and the Erie railroad are about on an equality in this matter, and that they should co-operate and abate the nuisance. Perhaps as good a division as could be made in the premises would be for the Erie company to furnish good, suitable ditches to discharge the drainage from below the cellars in that vicinity, to be carried through upon their lands to Dyke's creek, and that the village should furnish a suitable opening under State street, of sufficient capacity to carry off freely the water at any time.

I would suggest that said opening or culvert be of a width of two and one-half feet, by four feet in height, made of stone laid in cement, either capped with flagging or arched at top and with a flag bottom, which could be placed there for about seventy-five dollars ($75).

I find that the opening would require a maximum depth of eight feet, and that the ditch upon the railroad land just north of said opening should be three feet to make the discharge of drainage at a safe depth below all cellars.

Respectfully submitted.

R. H. LEE,

Village Engineer for Sewer Commission.

Wellsville, N. Y., *November* 13, 1890.

On motion of Commissioner Dawson, it was

Resolved, That the reports of R. H. Lee, engineer, marked A and B, respectively, be accepted, and the recommendations adopted as the sense of the commission.

JOSEPH S. NORTON,
President.

E. D. CLARK,
Clerk.

SPECIAL REPORT "B."

To JOSEPH S. NORTON, *President*, and MAURICE O'CONNOR, HIRAM J. TORRY, NICHOLAS RAUBER and WM. H. DAWSON, *Board of Sewer Commissioners of the Village of Wellsville, N. Y.:*

In the matter of drainage of the low land or swamp lying north of the depot of the New York, Lake Erie and Western railroad, within the corporate limits of the village, which, by your request, I have examined by making such measurements of lines and elevations, and taking such other observations as I deemed necessary in the premises, I find the following:

First. A creek, which finds its source something like a mile north of the northerly limits of the village corporation, and which may properly be called a mountain stream, and supplied by numerous springs along its route, makes its way through the land in question, emptying itself in the Genesee river about 120 rods further on. The fall of this stream is very rapid, having a decline from source to mouth of about 300 feet in a distance of less than two miles. After reaching this low or flat land it yet has a fall of some thirty feet to the river.

Second. I find that the watershed comprises a territory reaching for some distance north of the source of said creek, and taking the storm-water from the hill upon both sides of it to a point at the junction of Pearl and Madison streets. Also, the storm-water from a mountain upon the north side of the low lands either makes its deposit into the creek or settles upon the low lands.

further north. The whole watershed comprises an area of about 700 acres of land.

Third. The New York, Lake Erie and Western railroad in the construction of their grade for road-bed through this marsh, in a measure cut off the escape of this water to the river, except that in the line or track of said creek they constructed a covered culvert having a capacity of four cubic feet to the lineal foot. And at a distance westerly 1,200 feet from the creek furnished an open culvert, five and one-half feet in width, with its bottom on a level with the land surrounding this point.

This opening furnishes means for the passage of a small brook, and is also designed for the discharge of the surface storm-water in time of flood.

Fourth. I find that the creek at this junction with north bounds of railroad, where it enters the covered culvert, has a carrying capacity of twelve cubic feet (full banks) to each lineal foot, or three times the capacity furnished by the covered culvert.

I also find that the discharge through the open culvert is some seven feet lower than the creek bottom at the point of entrance to covered culvert, thus causing at flood times the surplus water to flow towards the said open culvert.

Fifth. The inadequacy of the openings above mentioned causes the water in flood times to back up on this land, and, as instanced by floods in 1889-1890, covered an area of about four acres, and with an average depth of four feet, causing the filling of cellars on comparatively high land, displacing sidewalks and shutting off, for the time being, direct communication with the business portion of the village, and, worse than all, the free circulation of water is checked at all times through this marsh, causing an unsafe sanitary condition arising from the pollution of the water, owing to want of circulation.

Plans for the Sewerage of Port Jervis.

REPORT OF ENGINEER OF VILLAGE SEWER COMMISSIONERS.

Port Jervis, N. Y., *February* 16, 1891

The Board of Sewer Commissioners, Port Jervis, N. Y.

I submit to you the following, viz.:

First. A plan of the village of Port Jervis, showing the alignment of the proposed sewers, and location of man-holes, lamp-holes and flush-tanks.

Second. Profiles of streets showing surface of street and depth and inclination of pipes.

Third. Drawings of man-holes, lamp-holes, house connections and a Van Vranken automatic flush-tank.

Fourth. Specifications for the construction.

Fifth. Estimate of cost.

These plans and specifications are for a strictly separate system of no roof or surface water to be admitted excepting enough for flushing purposes in the small systems which I have designated as East Main street and Carpenter's point. The contour of Port Jervis in such that the surface water is not a source of annoyance, it being quickly disposed of by surface gutters and a few short surface-water sewers into the Delaware and Neversink rivers, the two small streams that flow through it, and the Delaware and Hudson canal. It was thought at first, however, by your body, that it was desirable to carry the small stream, known as Spring Brook, in the main with the foul sewage. At present many houses in the vicinity empty their sewage into it, making it foul-smelling and dangerous. As a well-regulated system of sewers will make this stream less obnoxious and you concluded to deal with house sewage and surface water separately, as securing better sanitary results and as a matter of economy, it was decided to design the separate system only, leaving the future disposal of the brook to the trustees of the village, who, I understand, have a right to cover and improve it as a surface-water drain. In designing the system a large increase and extension of the settled portion of the village was calculated for. At present, in the most thickly settled residential portion, it will scarcely average five per cent for every fifty-foot lot. I have assumed that it may reach ten people and cover most of the territory that the system will reach, calculating for a future population of 28,000 people. The village is not one of very rapid growth. The population at present is about 10,000, so the provision for the future is ample. Average daily consumption of water in cities of 10,000 population varies from fifty to seventy gallons each person per day. I have assumed a daily consumption of water of seventy gallons per capita to flow off at an average maximum rate in sixteen hours. At this rate the pipes are designed not to flow more than one-half full, leaving the upper section to carry a heavy flow of short duration. The tables annexed to this report give, in detail, grade, length, and size of pipe, total lengths, population tributary to, assumed amount of sewage and capacity of pipe at each junction. Most of the laterals are six inches, excepting the long laterals reaching into the business portion of the town, in Front and Ball streets and Jersey avenue, which are eight inches. The minimum grade of laterals is 0.5 feet in 100 feet, with the exception of those in Kingston avenue district and a few in Germantown, which are 0.3 per 100 feet. The proposed sewerage, as shown on the plan, is divided into five districts, designated as Hammond street, Germantown, King street, East Main street and Carpenter's point. The Hammond street system covers the principal portion of the village. It begins near the highway, crossing over the canal to Germantown on Main street, passes down Main street, through Clark and Washington to Main.

From intersection of Washington and Main streets, the main sewer is eight inches; from Canal to Fowler and down Fowler to Orchard, ten inches; from Orchard to Hammond street, twelve inches; on Hammond street to Seward, fifteen inches; from Seward to outlet, eighteen inches. The lowest grade of this main is on Hammond street, 0.36 feet per 100 feet, being uniform from the junction of Hammond and Fowler streets to outlet. All the laterals in this district, with the exception of a very few short ones, terminate with a Van Vranken automatic flush-tank of about 125 gallons capacity. The long laterals on Front street, Jersey avenue and Ball street have similar tanks, with a capacity of about 200 gallons. The few short laterals which are not provided with flush-tanks terminate with inclined pipe as per drawing, eight inches in diameter, covered with an iron cover similar to cover as shown in drawing of fresh-air inlet, so as to be readily accessible, and enable the flushing of pipe from hydrants should stoppages occur. In the other shorter system, for the sake of economy, flush-tanks have been omitted in the shorter laterals and where the grades are steeper than 0.8 feet per 100 feet. While regular automatic flushings would be better, keeping the pipes cleaner, it is thought that an occasional flushing from hydrants through these inclined dead ends will answer every purpose. The lamp-holes shown in the drawing are for the purpose of examination of the pipes and locating stoppages. These are placed where stoppages are liable to occur, beginning of curves and changes of grades, and otherwise about 300 feet apart. They are to be covered as the fresh-air inlet, so as to be readily accessible. Man-holes are placed at all junctions of pipe, ten inches or more in diameter. The main outlet will be carried through the Erie railroad embankment through a culvert down along the banks of and eddy in river out into the main river below low-water mark, as shown in plan and drawings. A timber crib filled with stone, as shown in detail drawing, will be built to protect the pipe from floating ice. The main sewer in the Germantown district follows Main to Ferry street, then down Ferry street to river. It is to be eight inches to Buckley street and the rest ten inches to outlet. Automatic flush-tanks are to be provided for the longer laterals in the north side of main. On the south, although the grade is low, the laterals are short and the population sparse, it is thought that flushing from hydrant through dead ends will answer. The outlet will be carried out into the river below low-water mark. The pipe in the river will be protected from the ice by concrete and rip-rap, as shown in the drawing. The river bank here is abrupt, low-water mark, however, being some distance from the foot of the slope and the pipe will have to be carried some distance to reach low water. The King street main is to be eight inches from raceway to outlet. It follows King to Second street and down Second street to river. The laterals are short and steep and the two flush-tanks shown in drawing are thought to be sufficient. The outlet will be protected in the same manner as the Germantown; the conditions are about the same. The sewers in East Main street and Carpenter's point districts have sharp grades and are all six inches in diameter with eight inches outlet. It is thought it will only be necessary to protect outlets from ice by a covering of rip-rap stone. The length of sewer to be built is 80,000 feet, all vitrified sewer-pipe excepting outlets and under canal and raceway which will be built of cast-iron.

The estimated cost, $76,000, I think is ample, although somewhat below the average cost of similar sewerage. The building of this system presents no serious obstacles; very little rock will be encountered. Crossing the canal on Main street may give some trouble, as may also the water in the lower portion of the village, especially in the deep cut on Owen street. Through this portion of the village drain tile will be laid in the trench with the sewer pipe.

The outlets carrying the largest amount of sewage empty into the Delaware river. Two of these, Germantown and King street, may easily be combined, if thought desirable, or all finally united, but as all empty their contents into so large and rapid a stream it is thought that will not be necessary for a long time, so quickly will the matter be removed. Some idea of the current of the stream may be inferred from the fact that the river has a fall of seven feet in the 3,500 feet below the bridge. Carpenter's point and East Main street empty just below the settled portion of the village, into the Neversink. They can be carried farther away, but as the amount of sewage will always be small, and the stream is deep and comparatively rapid, their location as shown on plan will not offer any objection.

Respectfully yours,

H. C. LANDON,
Civil Engineer.

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *February* 27, 1891.

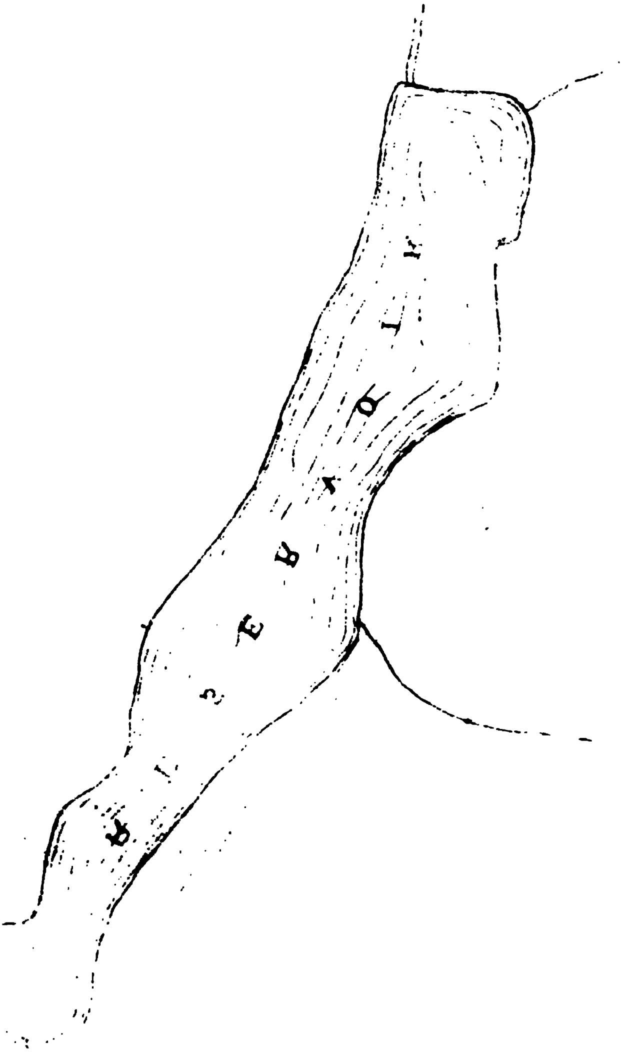
LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.*:

SIR.— I have examined the plans of the system of sewers proposed for the village of Port Jervis, have visited the village, and have the following report to make:

The system proposed is for house drainage only, with a little roof drainage in two of the smaller sections of the system. The surface drainage is not provided for by the plans, it being left to the other authorities of the village. There are no special difficulties in the solution of the problem of surface drainage, as the village is well provided with water-courses and is easily graded to throw the surface water into them.

There are five outlets proposed for the system, three into the Delaware river and two into the Neversink. Much the greater portion of the village drains through the main or Hammond street system and enters the Delaware river below the village. The amount of sewage discharged from the other outlets will never be great, and is in each case discharged into a swift current and a sufficient amount of water to give a very great dilution. The village is on the main stream of the Delaware river, and is the last village on the river in New York. The same statements regarding the discharge of sewage into the stream can be made as in the case of Walton and with additional force. The water supply of Philadelphia is the only one even remotely affected by the discharge of sewage into the stream, I believe.

The system as a whole solves the problem satisfactorily. I would suggest that the crib of the main outlet be turned to point more nearly in the direction of the flow. The interference of ice with the crib will be less if its top is put as near to low-water as possible. The omission of the crib and the protection of the end of the pipe by concrete and rip-rap as proposed for the smaller outlets may be even better. The low portions of the blocks between Fowler and Seward, Barcelow and Hill streets need filling to bring them up to the level of the sewers. This is apparently unavoidable, but I think the amount of filling neces-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ry can be reduced by running the Barcelow street sewer through
m Owen street on a rather flat grade, say 0.3 per 100 feet,
stead of running part of it down Seward street as shown on
e plans. There are some very low grades on the branches
the Kingston avenue system. The flush-tanks for these lines
ould be arranged for frequent discharge and the pipes will
quire special attention to insure freedom from stoppage. The
es of pipe agree with my own computations, made on my own
sis. I have not, therefore, checked the computations, in the
le in detail. The estimate of cost is, I believe, for the 80,000
t or so that it is proposed to construct at first. It is rather
w but the work can be constructed for it under specially favor-
le circumstances.

Respectfully submitted.

CHAS. C. BROWN,
Civil Engineer.

PLANS

FOR THE

Sewerage and Drainage of Irvington.

Plans for the sewerage and drainage of the village of Irvington were presented and approved. Subsequently a small addition to the plan was presented and was also approved. The report of the engineer of the village sewer commissioners, the map showing the sewer plan, and the map showing the modifications as approved follow:

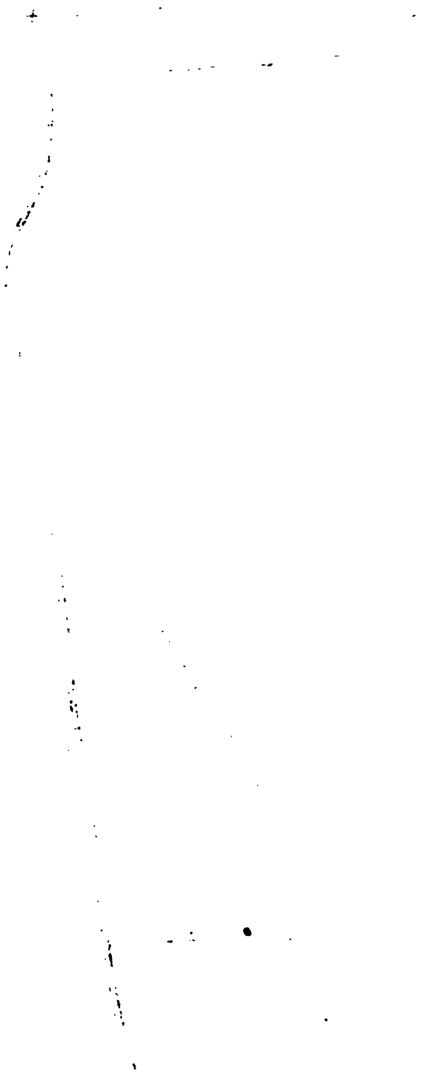
UNIVERSITY BUILDINGS, WASHINGTON, SQUARE,
NEW YORK CITY, *September* 14, 1891.

To the Honorable State Board of Health, Albany, N. Y.:

Gentlemen.— The sewerage commission for the village of Irvington-on-the-Hudson, in the State of New York, have requested me to submit for your approval a plan I have prepared for the permanent sewerage of that village, under their direction and under the authority of an act entitled "An act to provide for the construction of sewers in any incorporated village in this State." Approved June 6, 1889.

This map shows in black figures the elevation of the present surface of the ground in feet above mean tide-water in the Hudson river. Existing sewers are shown in black. The water-courses are shaded blue. The proposed sewers are shown in red.

The boundaries of Irvington are practically rectangular. The length of the village north and south along the Hudson river is about 9,000 feet. The easterly boundary runs nearly parallel to the river, and is distant about 5,800 feet therefrom. Irvington contains about 1,200 acres of land. There is one large water-



ourse running practically east and west across the middle village, nown as Barney's brook. About midway between this brook nd the northern end of the village there is a small brook running hrough a deep, abrupt valley, known as Matthiessen's brook, and n the northern boundary there is a third water-course along unny Side lane on the division line between Irvington and arrytown.

The property in Irvington is naturally divided into small lots nd large plots or tracts. Nearly all the property is used exclu-ively for residences and is likely to be used for that purpose for any years. The small lot owners are grouped quite thickly on ain street, between Broadway and the Hudson river, on the hort streets crossing the same, and at Abbottsford, on the east of roadway, south of Main street. A portion of Abbottsford borders n a low, swampy piece of ground which, if not provided with ewers, is likely to prove a serious menace to the sanitary welfare f the village.

The land generally is high and rolling. The surface water there-rom can easily be provided for by surface drainage, and only he sewerage matter from the buildings needs attention.

The proper location for the main outlet of the sewerage system f Irvington is along the line of Barney's brook. This will drain he principal portion of the village. The land on each side of he brook is high and irregular. All of that portion of the village hich now is or in the future likely to be cut up into small lots, rains naturally into this brook. With proper connections this utlet sewer through Barney's brook will drain all that portion of he village lying between and including Abbotsford and the iffany property.

The second outlet of importance is that necessary to drain that art of the village lying north of the Matthiessen property, and specially the lands on the line of Broadway and the aqueduct. his outlet should be laid along the southerly line of the Fargo-arney property, north of the Matthiessen property, over the queduct, through Fargo's lane to Broadway.

Some time in the future it may be necessary to build three other utlet sewers, one along Sunny Side lane, between Broadway and the river, one in Clinton avenue, between the aqueduct and the river, and either to use the present sewer built by Mr. Field or build another sewer about on the same line through the property now belonging to the Christian Brothers between Broadway and the river. The last three outlet sewers will not be required for many years. I have shown them, however, as a part of the permanent system of sewerage for the village.

I have not shown an outlet sewer along the line of Matthiessen's brook, because I do not think this sewer will ever be required as a part of the permanent system of sewers for Irvington. A sewer on the line of this brook, if built, will be very expensive to construct, and the cost of all lateral sewers connecting with it would be greatly increased. Its location would be such as to make it inconvenient of access for lateral sewers. In those parts of the village where the ownership of land extends from the river easterly, like the properties of Messrs. Matthiessen, Tiffany, Barney, Dows, Hamilton, the Christian Brothers, etc., there is not only no necessity but there is, in fact, a positive disadvantage in establishing for such property, a permanent system of sewers except in so far as outlet sewers are required for property in parts of the village which can not be otherwise drained. In such cases the outlet sewer should be so located as to provide for drainage, both for the inland property and for the lands through which the sewer passes.

The roads colored brown on the accompanying map are those which I understand to be public highways. The other roads are on private property and are not open to public travel.

Main street and Broadway are the two principal public highways. They have been thoroughly macadamized at considerable expense, and are in excellent condition.

In order to avoid interfering with the surface of Main street to the greatest possible extent, I propose generally to run the new sewers through the streets crossing Main street to the sewer in Brookside lane, and from thence through Brookside lane into the Barney Brook sewer. I propose to lay the sewer along Broadway on the west side of the street in order to disturb the macadam as little as possible, and also because less rock will be encountered on that side of the street.

I believe that the sewer, which is to be built along the line of Barney's brook from the river to Broadway should be of cast-iron, because when laid it should be permanent. But few connections will ever be made with this sewer, except in the case of lateral sewers, and such connections can be made any time without difficulty. This sewer is liable to be subjected to scour if the water course is allowed to remain and if the water course is obliterated, it will be covered to a considerable depth and will not readily be accessible. If this portion of the sewer is built of cast-iron, it will be durable and permanent. I also believe that the twelve-inch sewer in Fargo's lane, where it crosses the aqueduct, and the six-inch pipe sewers along the line of the aqueduct should all be cast-iron, in order to avoid any question of seepage from the sewers into the earth around the aqueduct.

The balance of the sewers recommended are to be of the best quality of stoneware, vitrified pipe.

I recommend a separate system of sewers because I do not consider that the local conditions are such as to warrant the outlay necessary for a combined system. I recommend, however, that the sewers shall be sufficiently large to take the roof water, and sufficiently deep to drain the cellars of existing houses as far as practicable. No cesspools should be connected with the proposed sewers, and no storm waters from the streets or from anywhere else, except from roofs and cellars, should be allowed to enter the sewers.

As there is a water-supply system in the village, I have provided for flush tanks at the dead ends, and at a few intermediate points in order as far as possible to automatically cleanse the sewers. This cleansing will also be assisted by the roof water entering the sewers. I have also provided for manholes about 300 feet apart along the line of the sewer, except through Barney's brook, where they will not be required.

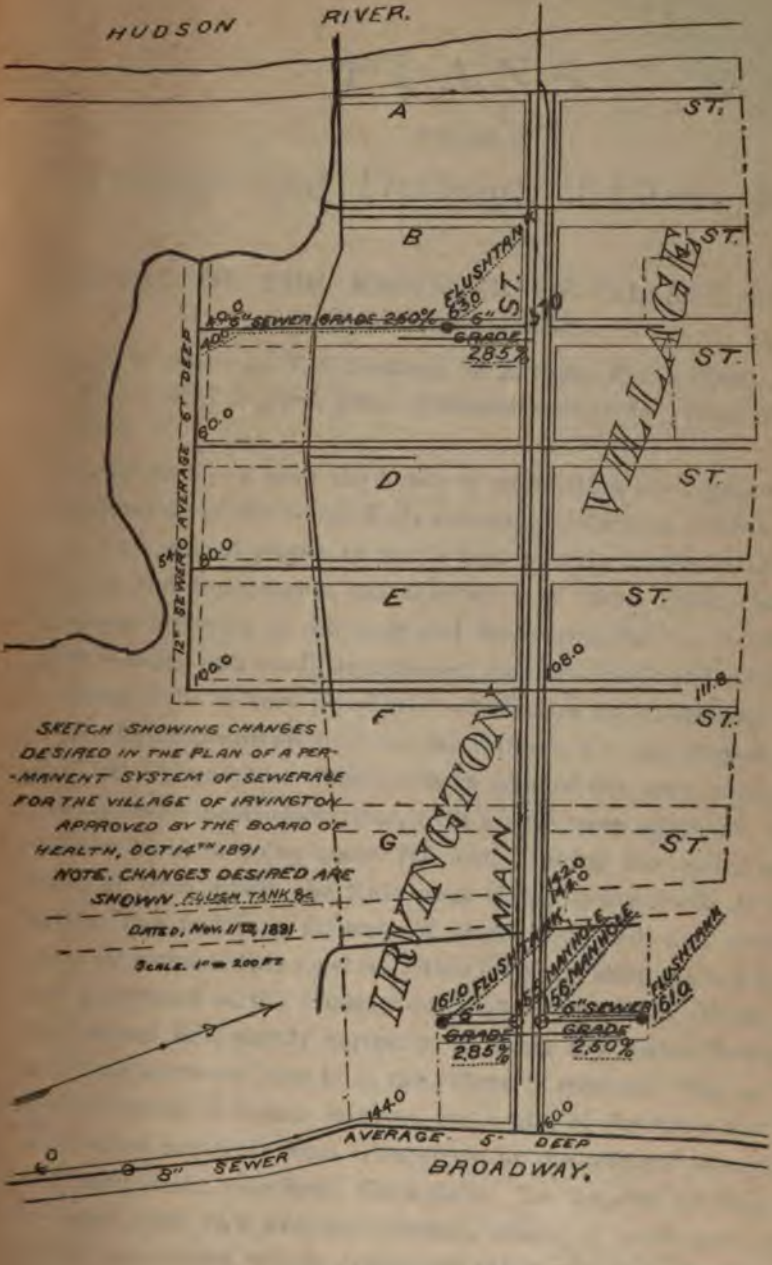
The existing sewers on both sides of Main street and along the southerly side of the built-up portion of the village were built solely to carry off surface water. They are only from three to five feet in depth. Some connections have already been made with them to carry off sewerage from houses. This action has resulted in the sewers becoming offensive in dry weather, as they are too large to be properly flushed. It is the intention of the village authorities to use these existing sewers only for carrying off surface water and not for sewerage purposes. The new six-inch sewers running along Main street will be laid under the sidewalk between the house line of the street and the curb line. The present sewers in Main street are laid just outside of the curb-line under the gutter.

I have described the sewerage system proposed for the village of Irvington in considerable detail in this report in order that you may the more readily understand the map and plan submitted herewith of a permanent system of sewerage for said village with such specifications of dimensions, connections and outlets as seem to be necessary. The map and plan referred to is entitled "Map and Plan of a Permanent System of Sewerage for the Village of Irvington, Westchester County, N. Y.," made by Charles B. Brush, civil engineer, September 14, 1891.

I respectfully request the approval by your honorable body of said map and plan and this report which is annexed thereto and which should be considered as a portion thereof, in order that final action may be taken thereon by the sewerage commission of Irvington.

Awaiting your reply, I remain, your obedient servant.

CHAS. B. BRUSH,
Civil Engineer.



SKETCH SHOWING CHANGES
DESIRED IN THE PLAN OF A PER-
-MANENT SYSTEM OF SEWERAGE
FOR THE VILLAGE OF IRVINGTON
APPROVED BY THE BOARD OF
HEALTH, OCT 14TH 1891
NOTE. CHANGES DESIRED ARE
SHOWN. FLUSH TANK &c.

DATED, Nov. 11th 1891.

SCALE. 1" = 200 FT

PLANS

FOR THE

Sewerage and Drainage of Glens Falls.

REPORT OF THE ENGINEER OF VILLAGE SEWER COMMISSIONERS.

To D. W. Sherman, T. S Coolidge, W. E. Spier, Frank Byrne, Hiram Krum, E. R. Safford, Sewer Commissioners of the Village of Glens Falls, N. Y.

Gentlemen.— I have the honor of submitting my report on the construction of the Glens Falls sewerage system, as follows:

It has seemed proper to me to first describe generally the geological and topographic characteristics of Glens Falls, that the absolute necessity of sewerage and the reasons for the location of sewers, large and small, as proposed, may be clearly understood.

Glens Falls is very peculiarly situated on an undulating plain which forms the divide between the watershed of the Hudson river and Lake Champlain. The southern edge of the town borders on the banks of the Hudson river, with a very steep approach, reaching the plain in going about 700 feet. Taking the center of the town at Glen street, the plain rises slowly going north, approximately five feet in a distance of about 1,000 feet, and until the soliders' monument is reached. This is the dividing point between the watershed of the Hudson and Lake Champlain. From here the ground falls slowly northerly, draining into Lake Champlain until the northern bounds of the village is reached. Bay as well as Glen street is situate in about the center of the town east and west; runs northerly from Glen street at the soldiers' monument, and both drain into Lake Champlain. To the east of Bay and perhaps 1,500 feet average distance, Ridge, a north and south street, is reached, which drains the other way into the Hudson river. East of Ridge all the north and south streets, Cherry, Walnut and east as far as Platt street, the drainage is all in the direction of the Hudson river.

Again all the west side of town, west and north of the soldiers' monument and Glen street, drains into Lake Champlain. The dividing line of watershed runs in an irregular manner southerly from this imaginary line east and west until the bluff of the Hudson is reached at near Park and Little streets. The undulating character of the plain has been so built up upon and streets graded, that large pockets for the surface water to settle in without any drainage have been formed. Notably at the junction of Hudson avenue, South and Park streets, Sherman avenue and Holman street pockets in Sherman avenue. Maple street, on the east side, is a vast pocket for the accumulation of surface water under ground. Bay street is not a continuous drainage, north, but the low point is at about Chester street, forming another pocket here.

Warren street, the most southerly principal street running easterly from the fountain at Glen steet, runs on a ridge that averages higher than the next street north, Maple, forcing the pocket of Maple street to be a complete basin.

The extreme flatness of all the plain, with its undulated surface forming pockets, makes the town a very difficult problem in drainage. That all the sewerage should be concentrated into one outlet in the watershed of the Hudson is an absolute necessity from the fact that there are no streams of any magnitude of discharge running in the direction of the Lake Champlain watershed, and all the sewerage of that portion of the town whose natural outlet is in the direction of Lake Champlain must be brought under ground, reversing the order of nature on the surface, and be forced by artificial grades under ground to an outlet on the Hudson river watershed.

Ground Water.

The town is a sand plain, overlying a limestone formation. The natural consequences of the geological topographical formation is an undue accumulation of ground water, which, in prosecuting my survey, I found almost universally present in the cellars. The sandy soil itself is very porous and drinking in nearly all the rainfall is supplemented by the daily water supply of approximately 1,500,000 gallons, also passing under ground, and with its accompanyment of excreta and refuse from habitations remaining there a constant menace to the public health. There are records of towns and cities that have been abandoned in Central America and foreign lands from ground water finally becoming so charged with excreta and sewerage as to absolutely make them uninhabitable.

Damascus, supposed to be the oldest living city of which we have any record, has from the beginning had a pure and abundant water supply and drainage. Naaman objected to bathing in the dirty water of the Jordan and said the rivers of Damascus were better than all the waters of Israel. Again ancient imperial Rome possessed a water supply of over 250 gallons per capita, and as elaborate a system, if not more so, than any of our present systems of sewerage. The dark ages under the code of scorning the practice of bathing and personal cleanliness, allowed the magnificent works of the ancient city to fall into decay, preserving only portions absolutely necessary for drinking purposes. Now, modern Rome pays the penalty of soil pollution in being shunned during several months in the year by strangers and citizens as well.

Again history repeats itself in our day, in the advancement of sanitary measures in our towns and cities where masses of people congregate. Moses in prescribing laws to the Israelites evinced a perfect understanding of sanitary precautions. In Deuteronomy, chapter xxiii, verses ten to fourteen, he exactly prescribes the principles of the modern dry earth closet and lays down the law of personal cleanliness to the extreme of banishment from camp for a season. While the Israelites were in the wilderness, with a camp continuously changing, he prescribed exactly what our modern sanitary science essays to do, the removal of all excreta and filth beyond the limit of the camp as we seek to do in our modern cities and towns.

An excess of ground water, reaching up and standing stagnant in many cellars, where it can not but be probable that it is heavily charged with diluted sewerage, is more than a menace to the public health. While such a state of affairs may not produce a spotted plague, a black death and the terrible scourges which prevailed in London at the end of the dark ages and dawn of the restoration, yet at this day they must produce the effect of lowering the vital energies to such an extent that, in case of an advent of the cholera or other kindred epidemics, those communities where such a state of affairs are allowed to exist from year to year will surely be a choice harvest ground for the grim messenger of death.

There can be no question but that typhoid fever, diphtheria and other kindred zymotic diseases are more prevalent in localities where there is no sewerage. In fact, statistics show that typhoid fever is being practically banished from our large cities and towns possessing water supplies and sewerage, and are becoming diseases incident to unsewered towns and country houses.

Bayles relates the case of a wealthy farmer in Orange county, New York, who experienced the terrible visitation of typhoid fever. The farm was one of the finest in that section; beautifully located and to all appearance a sanitary paradise, and yet, when the affliction came, the cause of disease was not difficult to find. It was a dairy farm and it had been found easier to carry water to the dwelling than to the stock; therefore the well was located adjacent to the barn. Gradually, but surely, the water supply was poisoned. The vital energies of the family lowered as the water deteriorated and when the proper stage was reached the scourge knocked at the door of the farm-house, taking away the farmer's son in the prime of life and leaving the father broken down in constitution and forever enfeebled by disease. All this was due to unsanitary surroundings in what should have been a residence absolutely proof against this class of disease.

The influence of the geological strata on public health has, from remote periods, been noted, in a general way, but only in England has any precise results been arrived at. Dr. Buchanan, in his reports, taking up twelve towns, shows a reduction in the death rate and describes the good result ro the effect of the drainage work drying up the wet soil in those places.

He shows that a pervious formation, saturated with ground water, is favorable to the development of phthisical complaints. While Professor Pettenkofer shows that epidemic outbreaks of enteric fever and cholera are coincident with changes and variation in the water level of the ground waters. Baldwin Latham says: "It has often been observed that on sloping ground diseases due to the excremental pollution occurs only on the lower side of the street." The healthiness or unhealthiness of our houses is, in a great measure, influenced by the condition of the ground atmosphere on which they are built, and this ground atmosphere is materially affected by ground pollution, for germinal matter deposited in contact with the soil receives that development necessary to run its destructive career, and the conditions of temperature and the structure of our houses render them favorable ducts for drawing up out of a polluted soil those miasms which have proved and still will prove destructive to human health and life. I think I have cited authorities enough to demonstrate the necessity of lowering the ground water to a permanent level below the elevation of all the cellars in the town and close this branch of the subject with the remark that the elevation of every cellar in town has been accurately determined, with reference to the surface of the street, plotted on the detail maps of streets, the grades of all the sewers adjusted so that the sewers will be about one and a half feet below the deepest cellar in town, and in addition a device has been provided, known as the "Babcock Ground Water Conduit," which is placed in conjunction with the sewers at intervals of twenty to twenty-five feet, or as required, rights and lefts. It passes all the ground water into the sewers, and is a device that is permanent and will not clog up or fail to work for all time. With the sewers constructed as designed, and with this device the ground water will surely and permanently be kept at a uniform level of about one and a half feet below the deepest cellar for all time, thereby removing the serious evil of a high and fluctuating ground water.

General Plan of the Sewerage System.

Having completed the field work determining the elevations of the various streets in the town, I selected the streets that radiate around Monument and Fountain squares, in the center of the town, i. e., Glen, Bay, Ridge, Sherman avenue, Warren, South and West streets, and plotted a composite profile placing all these streets which radiate out to the four points of the compass on one profile. An inspection of the profile then showed which were the highest and lowest in elevation.

This profile showed that the lowest point in the streets in town was on Warren street, at about the division line between the lands of the Keenan estate and D. W. Sherman, in front of the Sherman lime-kilns. In order to drain the entire town this must be the outlet. Coming up Warren and Glen, I concluded that, as they, with Ridge, were the main business streets, a wise plan of sewerage would provide a new means of disposal of the surface water of these streets through catch basins and the system of sewers. I also noted that Maple street laid in a pocket and that it would be essential to provide surface drainage there, as also the levels showed that at the corner of Park street, Hudson avenue and South street there was a low spot with no outlet for water to drain from. Again I found a low spot in Bay street at its juncture with Chester street, and that this place also needed surface drainage, as also Sherman and Holman streets. With the natural development of your town it will be but a few years when Glen, Ridge and a portion of Warren streets will be paved and then an absolute necessity for surface drainage on these streets will exist and, as the composite profile showed Glen street to be the lowest street in the northerly bounds of the town, I determined the best and most economic plan would be to build a forty-eight-inch sewer through Warren to Fountain park, then up Glen street, with a thirty-six-inch sewer to Chester street, running over Chester street to Bay, with a twenty-four-inch sewer, and draining Bay street this way into Glen street. The natural outlet for Ridge street being Fountain square, I have designed a twenty-four-inch sewer running up that street, which will take care of the sewerage water from stores and dwellings and provide for storm waters in the lower portions of the street. In order to reach Hudson avenue and South street I have designed a twenty-four-inch sewer in Park street, running to Hudson avenue and South street. Elm street I provide with an eighteen-inch sewer, emptying into Park. Maple street I provide with a twenty-four-inch sewer, with catch basins, passing through Oak street, a twenty-four-inch, and emptying into the forty-eight-inch at Warren street. The rest of the system consists of twenty, eighteen, fifteen, twelve, ten and eight-inch sewers, the sizes being determined by the probable output of sewage from the various streets. The system is thus part combined and part separate. Combined in the principal streets and at the low points or pockets, and separate system where the natural drainage of the surface is taken care of by the small streams running in the direction of the Lake Champlain watershed.

The soil of the town is naturally very absorbent, a large portion of the rainfall penetrates the ground and the ground water conduits will carry it all off rapidly. That portion that will flow off in the gutters I have assumed at a maximum of one and one-half inch rainfall in an hour and have proportioned the size of the sewers to carry off this amount of water in the districts made combined system.

Overflow Sewers.

The topographical feature of that portion of the village lying between Warren, Park streets and the Hudson river, in that it is very rapid, abrupt descent, is admirably adapted to the use of relief outlets or sewers in connection with the proposed sewerage system and I have availed myself of this feature as it thereby enables smaller main sewers to be projected as well as providing a relief for all time and makes the proposed sewers answer for an increase of population up to at least 50,000; and with enlargements in the relief sewers they may be made available and serviceable for any population or manufacturing industries which may be inaugurated within the bounds of the village. I have conceived the idea of connecting up the present storm-water sewer in Glen street with the proposed system at the junction of Glen and Park streets, having it enter the manhole at an elevation of about five feet above the proposed new sewer, also to build an overflow sewer down Lime street from the Warren street forty-eight-inch sewer entering the Warren street manhole at an elevation of about four feet above the forty-eight-inch. Also to utilize the present storm sewer in Oak street, entering the manhole at a similar elevation; these elevations being fixed at about three feet below the lowest cellars. Also providing to continue the Little street sewer down to Mohican street. The grade of the Little street sewer is in the direction of and empties into the Park street sewer at Hudson avenue at about four feet above the Park street sewer and is located about three feet below the lowest cellar in Little street, the effect of a surplus of water in the Park street sewer will be to find its way as storm water through Little street and down Mohican street into the feeder.

When the rain or surface water begins to enter the catch basins and sewers, the street refuse and debris is first carried into the sewers, and if the rain continues a sufficient length of time to fill the main sewers and has accumulated in sufficient volume for the relief sewers of Little, Glen, Lime and Oak streets to act; the discharge is then fairly pure water and free from deposit and then may be with safety allowed to run into the feeder without doing any damage. The grades on the relief streets are very heavy, Lime street being at a rate of over seven feet to the 100, and the eighteen-inch designed there, with the present storm-water sewers at Glen and Oak streets, will take care of and deliver any possible rainfall that may occur with no possibility of the sewers being overtasked or gorged or entering the house service laterals.

Outlet.

In prosecuting my researches to find a desirable and safe outlet for the system, I discovered that a large sink-hole existed at a point near the Sherman lime-kilns, and south of the feeder. This outlet for years has received the discharge of the two large dry docks immediately adjacent and opposite. The sink-hole takes in all the discharge of all the gates of the dry dock as fast as it comes, and with no surcharge, and to all appearances is capable of receiving all the water that can be brought to it. Where it empties no one seems to know; it probably is an underground channel in the limestone rock formation that may ramify and extend miles away. I also know that the leading chemical in all the successful sewage disposal works is common burned lime, air slackened, or mixed with water, and known as milk of lime.

It is the principal chemical used in England and also in Germany. The other principal chemical used is sulphate of alumina. The effect of the lime is to make the sewage alkaline, combining with the organic acids and carbon-dioxide, one of the disassociated products of sewage and form insolluble compounds. The lime also has the effect to kill bacteria. In Essen, Germany, the quantity necessary to kill bacteria was found to be ten grains to the gallon. In England the proper amount to be used is about fifteen grains to the gallon.

The sulphate of alumina combines with the alkaline bodies, especially ammonia, the free alumina sinks to the bottom in flocculent forms and carries with it all the floating organic matter. The chemical and mechanical actions are the same kind as when lime is employed with perhaps the exception that the sulphate of alumina is more energetic and rapid in its action on ammonia. At Wiesbaden, Germany, sulphate of alumina was found injurious rather than beneficial.

In many places a combination of both chemicals are used; this is the method of chemical precipitation employed at Worcester, Mass. Glen Falls is very fortunate that a pure lime, probably the purest lime in the United States, is one of the leading articles of manufacture and is reasonable cheap and at hand. But the fact that the sink-hole is in the pure lime formation and that the sewage of necessity traverses it underground for probably long distances and with a great amount of friction, may avoid the use or addition of lime mechanically to the sewage. The sewage requires to pick up only ten to fifteen grains to the gallon, no more lime than is found in many hard waters, and it has seemed to me that with the acid character of sewage no assistance to nature will be required for the reasons that nature will provide a chemical precipitation in the natural lime ledge, and that the sink-hole is capable of carrying away twice or three times all the possible sewerage of Glens Falls. I have arranged the plans for an utilization of the sink-hole as the outlet of the system in preference to running the sewerage into the Hudson river. Should it be found necessary to add ten grains to the gallon of lime in addition to the amount that will be picked up by the sewerage it is an inexpensive product close at hand. There will be no danger of an accumulation of deposit in the channels of the sink-hole as the storm water gathered in the sewers in the times of rainfall will act similar to a flush tank and force out all the deposit which has been precipitated by the lime and rendered harmless.

I can see no engineering difficulty in this sink-hole outlet working satisfactorily for all time.

Flush Tanks.

Flush tanks, which work automatically filling a well five feet in diameter and three feet deep in twelve hours, and emptying into the sewers their entire contents in ten seconds, have been provided at the head of all main lines of sewers. The plan provides for twenty-four in number. They are located principally on the eight-inch sizes of sewers. The effect of these flush tanks is to send on a great gulp of water in a few seconds sweeping the sewers clean every twelve hours.

Estimate of the Cost of Works.

The estimate of the cost of construction of the Glens Falls sewerage system complete, as per plans submitted, is $167,664.95.

Excavation in the Streets.

It may be supposed by some that the necessary excavations, in the streets, to construct the sewerage system might have an injurious effect on the public health. I do not feel willing to concede this proposition, for then the converse is true, that your subsoil in your streets is so badly contaminated with disease germs as to be dangerous to disturb, and your town is in about the condition London was at the time of the plague, when it was either the alternative of sewering and removal of the contaminating ground water, or abandoning the town. I do not think Glens

Falls has reached this stage of growth, although it must be apparent to all thinking men that it is slowly getting there. My notion is that the appliances proposed to remove the excess of ground water below the cellar bottom as fast as the sewers are laid, will entirely overcome the evil, if it exists. No epidemic of disease has occurred within my knowledge in any city or town in this country as an incident to the construction of a sewer system.

The True Economy of Constructing Sewers.

I propose to show that the best economy always leads to an efficient system of water works and sewerage. To provide water works without sewerage, is only going half way, providing a horse without a cart, a fluid without any vehicle to carry it off in.

Masses of individuals congregated in cities or towns, inagurate, to a certain extent, an artificial existence. Each individual is no longer a law unto himself, neither can each family live.

The habits and environments of others surrounding a person or family, must necessarily influence his or their position. The preservation of the health of a neighborhood is important not only to one but to all, to the rich and to the poor. The poor man's health is his wealth and the wealth and riches even of a Croesus will not stop the ravages of an infectious disease when once it obtains a foothold in neighborhood; and disease is no respecter of persons.

Dr. Playfair said in his Glasgow address in 1874: "Man has no control over a single natural force, the laws of health, like the other laws of nature, are relentless in their severity. If you stand on the edge of a precipice and overbalance yourself the law of gravity relentlessly pulls you down. Equally without mercy are you punished for the smallest infraction of the laws of health, whether you live in cities or villages."

In unsewered cities and villages, the outdoor privy is universal; inside water closets require both water pressure and sewerage.

In summer months privies are a nuisance scarcely to be tolerated, and, with an excess of ground water, are positive promoters of disease; while in wet weather and in winter their use involves an exposure that not all well persons, particularly ladies, are able to successfully withstand. Again at the back doors of many houses in unsewered neighborhoods we find either a defective drain or no drain at all. In the latter case the slops are commonly thrown on the ground, to be absorbed and their contents added to the contaminations of the ground water, in time jeopardizing the health of a whole neighborhood.

True economy, therefore, means the construction of an efficient system of water works and sewerage, and they pay for themselves ordinarily twice over in twenty years in the prolongation of the lives and the benefits to the health of the entire population of any city of town.

There is an actual money saving that will pay for the cost of the sewerage system, interest and all, in twenty years.

Baldwin Latham, the English engineer, has exhaustively shown the savings from a sanitary standpoint, taking the case of the town of Coryden. Here the saving in life and sickness during twenty years, estimated on a low basis, was more than double the cost of an elaborate system of sewerage and water.

It has been found from statistics kept that the death rate has been lowered from four to six persons in every thousand where water and sewerage have been applied. That is, there are four to six unnecessary deaths to every 1,000 persons, and more than this; for every unnecessary death there has been twenty-eight to thirty cases of preventable sickness, the average duration of the sickness being at least two weeks.

Now assuming that each death and funeral expense cost the sum of fifty dollars, and that each case of sickness involves a loss of say twenty dollars, then the actual cost of unsanitary surroundings during twenty years for a population of say 12,000 persons I estimate as follows:

Say five deaths per 1,000 saved each year for twenty years for 12,000 persons for fifty dollars, $60,000.

Twenty-eight cases of preventable sickness for twenty years for 12,000 population, at twenty dollars each, $134,400. Total $194,400.

To which add two weeks time of twenty-eight persons per 1,000 for a population of 12,000, to say nothing of the time of nurses and friends devoted to the sick, averaging the value of labor, skilled and unskilled, male and female, it is safe to say that one dollar per day is a low estimate, then twelve dollars a year for the twenty-eight cases of preventable sickness per 1,000 in a population of 12,000 persons would amount to $80,640. Amounting to a grand total of $275,040.

Conclusion.

Accompanying this report I submit for your approval a map of the entire village, showing the location of each sewer, the location of all man-holes, flush-tanks and lamp-holes, together with the sizes of the sewers plainly indicated on each street, with the direction of their flow. Also a composite profile showing the elevation of the surface of ground on Glen, Bay, Ridge, South, Sherman avenue and West streets, all plotted upon one scale and all from the same starting point. Accompanying the general map are thirty-seven maps and profiles of the 108 streets of your village all plotted on a large scale. The maps show all the details of construction on each street on a large scale, together with the location of every house or building in the village. The profiles are placed directly under the map and show the surface of the ground, the location and depth of every cellar in town; the profile shows also the proposed grade or level of each sewer, thus graphically showing the depth the sewer will be under each cellar. Also a sheet of details showing clearly all the general details of construction, i. e., man-holes, flush-tanks, ground water conduits, catch-basins, man-hole covers and method of connecting up the sewers of different levels at junction at man-holes, together with an index designating the sheet upon which each street may be found. I have endeavored to make the maps, plans and profiles so complete and upon such a large scale that they may be clearly understood by all persons, even if not technically familiar with maps and plans.

The sewerage system as designed will take care of all the sewage, domestic and manufacturing, for a population exceeding 50,000 persons, and will, with enlargements to the relief outlets, without disturbing the main sewers, be capable of providing for any future requirements.

The estimate of cost of construction is liberal, and I stand ready to enter into contract, under bonds, for the full value of the work, if required, to construct the same, complete, for the sum named in accordance with the plans submitted.

Respectfully submitted.

STEPHEN E. BABCOCK,
Civil and Hydraulic Engineer.

GLENS FALLS, *August* 28, 1891.

UNION COLLEGE, SCHENECTADY, N. Y.,
October 10, 1891.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

Sir.—I have carefully examined the plans for the sewerage and drainage of Glens Falls and have made a few suggestions to the engineer. As now presented, I think they will be adequate for the discharge of the sewage of the village and the street drainage from the portion of the village which is intended to drain into the sewers. The main outlet would be somewhat overcharged by the maximum rain-fall, but the overflows are sufficient to take excess. The report of the engineer accompanying the plans should be changed in one respect to conform to the plans as presented, viz.: The overflows are now at the level of the top of the outlet sewer instead of four or five feet above it. I would suggest that the patent ground water drain be not used on that portion of the sewer subject to back water at such times of maximum rain-fall as there would be liability of the flow of sewage into the surrounding sandy soil. Some of the sewers are larger than would otherwise be necessary on account of the method of discharging ground water into the sewer, the estimated amount of such ground water being large. The method of discharging ground water into the sewer is in the experimental stage, I believe, as I have not been referred to any place where it is in operation. It is not certain that it will be a success.

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As to the method of disposal, some experiments were made to discover, if possible, whether the water discharged into the sink-hole into which the sewage is to be discharged enters the Hudson river, at any point near. The series of experiments were not exhaustive, but no indication of such discharge within 1,000 to 2,000 feet of the sink-hole was discovered. It will be easy to prevent any nuisances at the point of discharge, and will not be difficult to insert a purification plant should the river be found to receive undue pollution.

The method of introducing surface water into the sewers is one which will probably require attention at rather frequent intervals and not infrequent repairs, but with proper attention the apparatus will perform its duty.

Yours respectfully.

CHAS. C. BROWN,
Civil Engineer.

PLANS

FOR THE

Sewerage and Drainage of Niagara Falls.

The following plans for the sewerage and drainage of the village of Niagara Falls were presented and approved:

Changes in Adopted Plans for Sewerage and Drainage.

The approval of slight changes in the plans for the sewerage and drainage of Suspension Bridge, Irvington and Medina were requested by the proper authorities. The portion of the system affected by the changes is presented in the revised form on the accompanying maps. The change in the Irvington plans accompanies the original plans preceding this page. The changes in the plans of Medina follow:

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PLANS

FOR THE

Sewerage and Drainage of Far Rockaway.

In May, 1891, plans for the sewerage and drainage of the village of Far Rockaway were presented to the Board by the sewer commissioners of the village. After full discussion and hearing of the arguments for and against the proposed plans, they were rejected, on the ground that the proposed discharge of sewage into Norton's creek, without purification in part, at least, would be detrimental to the health and comfort of the neighborhood. In November the plans were again presented, having been modified with the intention of securing the discharge of the sewage into a deep channel of Jamaica bay. Full hearings of the case were again given, and one meeting of the Board was held at Far Rockaway. Experiments with floats were tried at different stages of the tide. The plans were again rejected as not yet solving the question of unobjectionable discharge of sewage. The report on the experiments on the flow of currents follows:

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *November* 17, 1891.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

SIR.— I have the following report to make of the results of the floatage experiments in Jamaica bay and Norton's creek, taken to obtain information as to the advisability of permitting the discharge of the sewage of the village of Far Rockaway into those waters.

On November seventh, I made the experiments on the ebb tide during the first two-thirds of its duration. The courses of the floats are plotted on the accompanying map in green. They show in general that in Conch's Hole there is a good current which increases in strength as the tide falls, but that there is some possibility of the deposit of sewage on the meadows adjoining, owing principally to the effects of the wind. In the channel from the north into Little bay, there is but little current until the latter third of the ebb, and all the floats grounded before getting out of the channel. This effect would be decreased by the dredging of the proposed channel, so long as the channel remained open.

On November twelfth, experiments were made by yourself and Mr. Cumings at the same places on the early part of the flood tide. The courses of these floats are plotted on the map in red. They show in general a stagnation of water in Conch's hole and a grounding of floats in the meadows adjoining the hole or those adjoining Little bay and the channels out of it, indicating that sewage in the hole at time of low tide would not get out to sea but would be brought back and largely deposited on the marshes. The experiment tried in Beach channel at the same time indicated that sewage in that channel at low tide would be carried back to the shores in the upper part of the bay.

The most conclusive experiments, in my opinion, are those made by yourself with Mr. Cumings and myself on November thirteenth in Norton's creek. These are plotted on the map in red. They show a current to the east in Norton's creek until 2.15 p. m. on that day. Low tide at Conch's hole on that day occurred about 12.20 p. m. Therefore, sewage would not reach the bay until more than two hours after the rise of the tide had begun, and the first effect would be the dissemination of the sewage about the upper part of the bay with considerable deposit of the same on the shores and marshes. The time of entrance of the sewage into the bay would be more than two hours after low tide in the bay because the bar at the westerly end of the creek is laid bare at low tide and is not again covered for perhaps three hours or more after low tide, when the tide from the east has had time to fill up Norton's creek to the level of the bar. My observation of Norton's creek, while not extending over the entire period from one high water to another, leads me to the belief that the current in that stream is towards the west only during a portion of the period of flood tide in Jamaica bay, that it has little or no current for two to four hours, and that it flows to the east during a period beginning shortly before high tide in the bay, and extending to a time two hours or so after low tide in the bay. The discharge of sewage into the creek during the time the stream is flowing east is not advisable because Rockaway inlet into which the creek discharges, is stagnant during a period of one to three hours about the time of low tide, and never has a very heavy current. It is used largely for bathing and floating sewage in the water would be very objectionable. If no restriction of the discharge of sewage to given times of tide is made, nearly all the sewage would go into the inlet to the east of the creek. I have shown that its discharge into the bay except during the latter part of the flood tide is impossible, and during that time is not advisable. Therefore, it is not advisable to discharge the sewage into the creek at any time.

I might add that the dredging of the channel would cause the current in Norton's creek to change to the west earlier than it now does, but not early enough to get the sewage out into a deep and strong current, before low water outside the entrance to Jamaica bay. The tides on the days of observation were average, extreme low tide being about nine inches lower than the ones observed.

Respectfully submitted.

CHARLES C. BROWN, C. E.

Data of Float Experiments in Jamaica Bay, November 7.

PLOTTED IN GREEN ON MAP.

(*Ebb tide; wind from north.*)

NUMBER OF FLOAT.	Date.	Put in.	Taken out.	
		P. M.	P. M.	
1	November 7	1.28	1.48	Taken out.
2	November 7	1.43	2.12	Grounded.
3	November 7	1.58	2.30	Grounded.
5	November 7	2.25	3.00	Taken out.
6	November 7	3.15	3.45	Sunk.
7	November 7	3.34	....	Lost.

Data of Float Experiments in Jamaica Bay, Nov. 12 and 13.

PLOTTED IN RED ON MAP.

Flood Tide.

NUMBER OF FLOAT.	Date.	Put in.	Taken out.	
1	Nov. 12	11.17 A. M.	11.24 A. M.	Grounded.
2	“ 12	11.23 “	*11.58 “	“
3	“ 12	11.24 “	*12.13 P. M.	“
4	“ 12	11.33 “	12.02 “	“
5	“ 12	11.47 “	12.06 “	“
6	“ 12	12.05 P. M.	12.33 “	“
7	“ 12	12.10 “	1 20 “	“
8	“ 12	12.24 “	12.44 “	Taken out.
9	“ 12	12.26 “	12.44 “	“
10	“ 12	12.41 “	12.55 “	Grounded.
11	“ 12	1.25 “	2.00 “	“
12	“ 12	1.34 “	2.30 “	“
13	Nov. 13	†10.22 A. M.	10.59 A. M.	Grounded.
14	“ 13	10.20 “	10.21 “	“
15	“ 13	10.20 “	10.45 “	“
16	“ 13	10.46 “	10.53 “	“
17	“ 13	10.53 “	‡11.20 “	“
18	“ 13	11.07 “	11.15 “	“
19	“ 13	11.19 “	11.22 “	Taken out.
20	“ 13	11.26 “	12.04 P. M.	Grounded.
21	“ 13	11.27 “	12.07 “	“
22	“ 13	11.27 “	12.07 “	“
23	“ 13	12.34 P. M.	12.51 “	“
24	“ 13	12.35 “	12.53 “	“
25	“ 13	§12.36 “	12.55 “	“

Wind from west on November twelfth; from northwest on November thirteenth. At 2.15 P. M. current on surface still slightly east.

*** Met dead water at 11.30 and started up stream at 11.40. † In eddy at point two minutes. ‡ Struck point at 11.05 and worked down along shore. § Stuck on point for three minutes.**

INVESTIGATIONS

BY

ORDER OF THE GOVERNOR.

1891. 11

Glen Cove Starch Works.

As detailed in the last annual report, an investigation of what was stated to be a nuisance arising from the discharge of refuse matter from the starch and glucose factory at Glen Cove into a creek emptying into Hempstead harbor. The report of the committee of the State Board of Health on the matter and the report of the board to the Governor are printed in the eleventh annual report. The following order was issued by the Governor upon the information and recommendations contained in those reports:

STATE OF NEW YORK:

EXECUTIVE CHAMBER.

Whereas, A petition, signed by citizens of the village of Sea Cliff, was presented to me in July, 1890, alleging the existence of a public nuisance at Glen Cove, Long Island, arising out of the methods and practices employed by the Duryea Glen Cove Starch Manufacturing Company in the manufacture of starch and glucose, whereby the health and comfort of the people of the community are jeopardized and the oyster and fishing interests are injured; and

Whereas, On the fourth day of August, 1890, I did, as Governor of the State of New York, pursuant to chapter 322, of the Laws of 1880, require, order and direct the State Board of Health to examine into the nuisances alleged to exist by the aforesaid petition, and to examine into the questions affecting the security of life and health in the localities mentioned in the aforesaid petition and to report to me the results of such examination; and

Whereas, The said State Board of Health have made the required examination and reported the results thereof to me within

Massachusetts and New Jersey; also in view of our contracts to make deliveries to said farmers of said food; their contracts to make daily deliveries of milk, the products of said feed; considering all things, I did not think it probable that you would be disposed, peremptorily, to enforce the conditions of your communication or order.

I therefore sent our Mr. Phelps to see you, to present to you briefly the hardships in the case, and to desire you to officially stay proceedings and grant us a hearing.

Mr. Phelps reports to me upon his return this morning that you and the State Board of Health were disposed to take no further immediate action, but that you and they would await further communication from this company; that there was no hurry in the matter, and that nothing would be done until the proprietors of the Glen Cove factory had stated their position.

In conformity with such understanding I would now say that we do not desire to avoid any issue which may be raised in the premises.

We are aware that, for several years, certain persons at Sea Cliff, in no way representing a majority of the citizens of that village, have, from time to time, formulated complaints, none of which, in our judgment, were founded upon fact. We have always admitted that, under certain conditions of atmosphere in the summer, there has risen from the flats in Glen Cove an odor, to some offensive. It has been and can be shown that that odor existed under the said conditions long prior to the erection of the Glen Cove factory.

I would not deem it proper to here enter upon any argument of the case. I simply wish to say that we do not wish to avail of yours and the Health Board's courtesy in according time to needlessly delay an investigation of the matters at issue. We will be glad to have you or the Health Board set down a time when we may be heard upon all questions involved, and when we may produce witnesses, where, in short, a searching investigation may be made. We earnestly desire to reach a finality in the matter, and have responsibilities for the conditions complained of properly placed.

We do not wish to avoid any responsibility that properly devolves upon us, nor will we attempt to. Wherever we may be found to be in fault we will cheerfully conform to all practicable requirements that may be made of us.

As to our legal rights in the matter I have not taken counsel, nor do I know that it will be necessary to do so, as I rely upon your well-known integrity and believe in the fairness and justice of the Health Board.

We have no doubt that a satisfactory solution of all questions involved may be promptly arrived at.

We will await your or the Health Board's further communication in the matter.

Yours very truly.

HIRAM DURYEA,
President.

STATE OF NEW YORK:

EXECUTIVE CHAMBER, *June* 10, 1891.

Dr. LEWIS BALCH, *Secretary State Board of Health, Albany, N. Y.:*

Sir.— I am directed by the Governor to transmit herewith the inclosed letter from Hiram Duryea, president of the National Starch Manufacturing Company, and to request the State Board of Health to make further investigation into the alleged nuisance at Glen Cove, L. I., for the purpose of ascertaining whether the Governor's recent order in that matter ought to be in any respect modified.

Yours very respectfully.

T. S. WILLIAMS,
Private Secretary.

In consequence of this direction by the Governor a committee was appointed by the State Board of Health to proceed to Sea Cliff, and make such further investigation. The following is a claimed that it ought to be proved, and claimed the right to cross-examine the witnesses by whom it was sought to be proven. The burden of proof ought not to be thrown upon the company to disprove charges made against them, to prove a negative. Although it was shown that in the reports of the expert there were some odors from the factory, it was not proved that the odors injuriously affected the residents.

Mr. Campbell was not surprised at this assumption. He expected it. The order which brought them here was the order of the Governor based upon a petition for a rehearing, a review of the order already made. The petition referred to in 1883 had been supplemented by a petition in 1890. Answers had been made by the representatives of the factory. The object of the petition was to move the Governor to have the State Board make an investigation in its own way. The Board did so. Impartially entered upon the investigation, examined such witnesses as it saw fit, went to the factory of the defendant, went all through it, made an examination satisfactory to itself, consulted the parties to the petition on both sides, and the result of that investigation was the order of the Governor. That order stands just as any order made by the court until it is reversed or set aside by an order to show cause why it should not be set aside and modified. It devolves upon the other side to show cause why the order of the Governor should not stand or be changed or set aside. The State Board has already determined the question as to whether a nuisance existed or not. They made expert examination by chemist and engineer. Mr. Cowan had admitted that there was a nuisance made in 1883, and virtually admitted that there are odors there to-day. It is the business of the other side to show cause why the order of the Governor should be modified.

Secretary Balch stated that upon consultation with counsel the committee took that view. The Board had decided upon the existence of a nuisance at Glen Cove upon reports made to it at full session by those sent to investigate. The Board had taken the whole matter into consideration and have come to the conclusion that there was a nuisance in the discharge of the waste waters from the factory into the creek in its being carried down by the tide to the bay at Sea Cliff making a smell. The Board made its report to the Governor and upon that report the Governor made his order. The committee hold that the defendant should show cause why that order should be modified.

Mr. Cowan held that there were two ways authorized by law for an investigation by the Board. First, by sending experts and examinng themselves, and second, by an amendment to the constitution authorizing the calling of witnesses and taking sworn testimony. He understood that this whole matter was referred back to the Board to be examined as to whether the order of the Governor should be modified and that the Board had decided to investigate the matter by taking sworn testimony. He imagined that that opened the whole question. He did not think they were required to put witnesses on the stand.

The other side were to make their own case, submit their witnesses and give them an opportunity for cross-examination. He would like to know who have been affected by the odors, how often and under what circumstances, and he would like to have more than the unsworn statements of the petition.

Dr. Balch asked if it was not true that the Board have, under the authority conferred by chapter 320 of the Laws of 1880, investigated this matter and found against the factory.

Mr. Cowan said, not upon testimony.

Dr. Balch said that the former investigation was not upon sworn testimony, that it was all upon unsworn testimony and that the amendment of the law allowing the State Board to swear witnesses was not an amendment of the organic law, but an amendment of chapter 270 of 1885. Under the organic law of the Board it has already investigated the factory and found against it and you should now produce evidence to show why the order of the Governor should be modified

Mr. Cowan said that he understood it would make a new trial of the case.

Dr. Balch did not so understand the order. It was to make further investigation to see whether the order should be in any way modified.

Mr. Cowan stated that they had a number of witnesses for the purpose of proving that the discharge of the waste-waters into the bay was not deleterious to the fish or oyster industry, also a number of residents who have never noticed anything improper from the factory. He would be able to prove other sources of odors than the one complained of, but the company did not wish to have any controversy with the Board of Health, and while it was willing to substantially comply with the order of the Governor, there were one or two points in which it could not comply. Neither the Board of Health nor the Governor had power to order an illegal thing. The company was ordered to run a pipe into the deep water of the sound in order that the wash-water from the factory before it has time to decompose shall mix with the large body of pure water and so be disseminated in such a way that there will be no decomposition. The company could not do that for the reason that they had no legal right to do it and the Governor had no legal right to order it. No body of men and no official has any right to order a corporation or an individual to make a permanent erection upon another man's land. They could not legally order the company to commit trespass and permanently occupy and make use of another person's property. The company owned land down to the dyke, but no further. According to the decisions of Profs. Brown and Perkins the trouble seemed to be that the waste-water discharged into the basin remained there pent up a certain length of time exposed to the hot sun. Although suspended matter is very small there may be and is a certain amount of decomposition. The odor was not at all different from the odor from waters of commercial ports. He had noticed it in the canal. He was very doubtful whether any very large portion of it was from the discharge of the waste water into the basin. There would be a good deal of this same difficulty even if the waste water from the factory was not added to it. That it adds to the putrescence he did not deny. The suggestion of Professors Perkins and Brown in order to prevent any addition from the waste water was, that while it was still unfermented, still inoffensive, it be discharged into a large body of pure water that would dilute and disseminate it so that it would not ferment at all. The conditions were very different from what they were in 1883. Then there was a very large amount of suspended matter discharged so that the water was milky when it left the works. It did settle to the bottom and was spread upon the flats to some extent. Since then, however, after trying long and expensive experiments recommended by the Board of Health, making a tank and spreading sulphate of iron on the bottom for the purpose of preventing decomposition, and after finding it did not work, the company took out the tank, after spending a large amount of money in trying it, and did what they do now, take the waste water into settling tanks, treat it with sulphuric acid, neutralize the acid, and precipitate nearly all the suspended matter in the water, so that it now flows away from the settling tanks clear and with no trace of suspended matter to the eye. That it does contain suspended matter to some extent very finely divided, there was no doubt.

Now, if this waste water, which certainly amounts to no more than 200,000 gallons a day, which, according to Prof. Tucker's analysis, contains something like seven gallons of solid matter, if that can be carried in pipe down below the lock gates and there discharged into the creek, so that the six feet of tide which comes up twice a day and fills it with pure salt water may take it up and disseminate it, he did not think there would be any more difficulty from the waste water in the factory. That they were prepared to do. They could not make a pipe over a mile in length and carry it out into the deep water of the sound; they had no right to do that; but the present plan would substantially do away with any difficulty that arose from the introduction of this waste matter into the waters of the creek and bay. He did not believe it would entirely do away with the odor, because he believed that even if fresh water were collected and held in the same manner as the water in that basin it would have more or less odor. It would, however, prevent any more being added to it. He asked an opportunity to try the plan. The company were willing to go to any reasonable expense to prevent a nuisance to the people at Sea Cliff and comply with the orders of the Governor and the orders of the board. They asked to be allowed to try the experiment of taking this not very large quantity of effluent and discharging it at the point proposed where it would mix with hundreds of thousands of barrels of pure salt water twice a day, and thus be prevented from fermenting and putrefying.

Counsel explained improvements made by the company in the way of straightening and deepening the channel of the creek, which would prevent any of the wastes of the factory flowing along the shore at Sea Cliff.

Dr. Balch asked if, by request of the Board, the action of the Governor's order be suspended for a reasonable time, the starch company would immediately make the experiment and give the State Board a chance to see if it was sufficient to abate the nuisance.

Mr. Cowan.— Yes, sir.

Dr. Balch.— The rest of the order remaining in force.

Mr. Cowan.— We do not agree to make this experiment because we admit that the allegations against the company are true. We ask that the Board suspend this investigation till we try this experiment. If the experiment is not satisfactory we do not want to be concluded by the failure.

Mr. Campbell said they were there to try every question it was proper to try at that time. Eight or nine years ago this matter was investigated and an order was made. There has not been a single order made that was not complied with. The factory had not done what it had agreed to do and they had no guarantee that it would do so now.

Mr. Cowan asked what the company had agreed to do that it had not done.

Mr. Campbell did not think it material to discuss, but the fact was, an order had been made with which they did not comply.

Dr. Balch.—We are here to find out whether we shall go on and take testimony to see whether the order of the Governor should be modified in any particular. The defendants have made a proposition.

Mr. Campbell said if in the judgment of the chemists and engineers of the Board the changes proposed will sufficiently alter the conditions, that the people of Sea Cliff will not suffer as they now do, and will entirely remove the trouble or remove it to such an extent that they can tolerate it, we are perfectly willing to try the experiment. They believe, however, that the company should make some assurances, give a bond or do something that would secure the rights of Sea Cliff.

Dr. Balch thought that the guarantee to the petitioners was that the order of the Governor was merely suspended and a time specified for the accomplishment of the work. The Board could then investigate and see if the work done abated the nuisance.

Mr. Campbell.— The question of the admissibility of its being a nuisance has been passed upon.

Dr. Balch.— I think the board has passed upon that question.

Mr. Cowan.— If by making this offer we are to be precluded from making application to show that this starch factory was not making a nuisance, we will go on with the testimony.

Dr. Balch read the order of the Governor and said that the failure of the experiment would not preclude them from applying to be heard on the question of the nuisance.

Prof. Perkins.— While we propose to carry on the experiment, and I myself have no objection to it, and am rather inclined to think that you may abate the nuisance in that way, yet I do not want to be held responsible for saying that you will abate the nuisance in that way. You must not expect to immediately abate it. There is a certain amount of matter that will have to ferment itself out before you get rid of the smell. It would be hardly fair to say that because the water has some smell that the method which Mr. Duryea proposes to adopt is entirely unsuccessful. I think the people should have a little patience in this matter. There is a mass of matter there on the side of your place which it is impossible for you to get rid of. It has got to get rid of itself. It is hardly fair to expect that the next day after the experiment that all the smell is going to be dissipated.

Dr. Balch.— We will consider the matter at present held open unless objection is made.

Mr. Campbell asked if the Board was not going to fix a time for the work to be done.

Dr. Balch asked about how long it would take the company to construct the pipe.

The President of the company.— I will do no act that will imply in the remotest degree a responsibility on the part of the company for odors which for all time have emanated from those flats. We will do in a neighborly way anything that we can do to suit the prejudices of the people about us. If this case had gone on for trial, we would be able to prove that the odors were not only from the flats but were such as arose from the bay. We can proceed immediately, can proceed to put in the pipe, but we do not do it to admit that we are abating a nuisance.

Dr. Balch.— The nuisance has been established, and this is a mere suspension of the Governor's order on the recommendation of the Board, as recommended by counsel.

Mr. Campbell wanted it perfectly understood that they did not ask any favors of the company. This was a matter of right, which the Sea Cliff people claimed as a matter of law and justice. They appealed to the State Board, and the State Board decided with them. The Glen Cove people were the ones that were asking favors, they were the under dog. They were brought to a point where they were obliged to do a great deal. They ask modification of the Board's recommendations in some particulars. We do consent upon condition that it be done and done at once.

Dr. Balch asked how soon the work could be done.

Mr. Duryea said it depended on circumstances. It was very hot, and if it was necessary to go back to the ancient condition of things that existed there before they would have to draw the water off the mud flats. It would be necessary to draw the water off in order to get the conduit in. In doing that it would naturally lay bare the mud, the consequence of which they would not be responsible for.

So far for the effect. The time required to do it might be three months.

Some difference of opinion arose as to the time necessary to do the work, when Dr. Balch announced the decision of the committee to be to fix the time for the completion of the work as the fifteenth of September, 1891.

Mr. Cowan.— I suppose we must accept it.

Dr. Balch.— The committee will report its action to the Board, and the Board will report to the Governor, that upon meeting the contestants in the case at Sea Cliff, a proposition was made from the company, modifying the manner of the discharge from the factory, which was causing the nuisance, and that the Board allowed two months and a half to put the pipe in, and recommended a suspension of the order till that experiment had been passed upon.

In accordance with the report of this committee to the State Board of Health, and the action of the Board with reference thereto, the following report was sent to the Governor in regard to the suspension of the previous order:

ALBANY, *July* 9, 1891.

Hon. DAVID B. HILL, *Governor of the State of New York:*

Sir.— In accordance with directions received from you, dated June tenth, that the State Board of Health make further investigation of the Glen Cove matter, to see if the order made against the Duryea Glen Cove Starch Manufacturing Company should in any way be modified, I respectfully report:

That the Board, at a special meeting held at Albany, June 20, 1891, appointed a committee, consisting of Commissioners Milbank and Perkins and the secretary, to investigate the matter, take testimony and report to the Board; that this committee did visit Sea Cliff, having notified all parties concerned of the time and place of its visit that they might present such evidence or other statements as seemed to them best bearing upon the matter under investigation; that the parties did appear before the committee of the State Board at Sea Cliff on the twenty-sixth of June; that the representatives of the Duryea Glen Cove Starch Manufacturing Company submitted to the committee a proposition looking toward the abatement of the nuisance, which upon consultation with the expert engineer employed by the Board was considered worthy of trial; that the committee agreed to report it favorably to the State Board of Health; and that at a meeting of the State Board of Health held in Albany on the first of July, the Board, after hearing the report of the committee, directed that the Governor be requested not to enforce his previous order on the Duryea Glen Cove Starch Manufacturing Company until such time as the State Board shall advise.

Very respectfully your obedient servant.

LEWIS BALCH,
Secretary.

In accordance with the recommendations in this report the Governor issued the following order:

STATE OF NEW YORK:

EXECUTIVE CHAMBER.

Whereas, On the third day of June last, upon representations and recommendations made to me by the State Board of Health, I did issue an order directing the Duryea Glen Cove Starch Manufacturing Company to carry out certain prescribed suggestions for the abatement and removal of alleged nuisances arising out of the manufacture of starch and glucose by the said company at Glen Cove, Long Island; and,

Whereas, The State Board of Health has reported to me that after subsequent investigation of the alleged nuisances and after a hearing of all parties in the matter, a proposition looking toward the removal of the nuisance in a manner different from that prescribed by the said order has been submitted to the Board by the officers of said company, and is considered by said Board to be worthy of trial; and,

Whereas, The State Board of Health, in consideration of the aforesaid facts, does request me to suspend the provisions of said order until such time as the State Board of Health shall advise;

Now, therefore, in pursuance of the power vested in me as Governor, I do declare that the provisions of said order are hereby suspended during such time (not exceeding the period of four months, however, from the date of this order), as in the opinion of the State Board of Health shall be sufficient for determining to the satisfaction of the Board whether the method submitted by the officers of the Duryea Glen Cove Starch Manufacturing Company for the abatement and removal of said nuisances is a satisfactory means of accomplishing the purpose of the aforesaid order; and I do also direct that at the expiration of said four months the State Board of Health shall report to me whether in its judgment the methods employed by said company have accomplished the desired object, namely, the abatement and removal of said nuisances, and if the judgment of said Board be that the methods employed by said company have abated and removed said nuisances, then upon the filing of such report with the Secretary of State the provisions of said order of June 3, 1891, shall remain suspended indefinitely; but in case the judgment of said Board as shown by its report be that the methods employed by said company have not abated or removed the said nuisances, then upon the filing of such report as aforesaid, and thereafter, the provisions of said order of June third shall continue in force and of full effect.

Given under my hand and the privy seal of the State, at
[L. S.] the Capitol in the city of Albany, this 24th day of July,
in the year of our Lord eighteen hundred and ninety-one.

DAVID B. HILL.

By the Governor:

T. S. WILLIAMS,
Private Secretary

Investigation of Effects of Proposed Discharge of Sewage into Mill Creek by the Town of Flatbush.

By chapter 161 of the Laws of 1889, sewer commissioners were authorized for the town of Flatbush, who proceeded to lay out and construct a system of sewers for that town, the outlet which was located on Mill creek, a side channel of Jamaica bay. Numerous residents of the town of Flatlands, adjoining, complained to the State Board of Health, through their counsel Evarts, Choate and Beaman, and were recommended to prepare and present a petition to the board of health of the town of Flatlands, asking that board to take action to prevent the production of the anticipated nuisance. The text of that petition is as follows:

BEFORE THE BOARD OF HEALTH OF THE TOWN OF FLATLANDS.

In the Matter of the complaint of certain of the inhabitants of the Town of Flatlands, praying for an examination and investigation of the construction and location of the Flatbush sewer and the outlet thereof in Mill Creek, in Jamaica Bay, in the Town of Flatlands, and the disposition of the sewerage matter of the Town of Flatbush through such outlet, and praying for an order preventing the construction of such sewer and outlet.

To the Board of Health of the Town of Flatlands:

The petition of the undersigned, on behalf of themselves and other inhabitants of the town of Flatlands, respectfully shows:

First. That your petitioners have been for many years and now are inhabitants, and many of them large property owners of the town of Flatlands, and have been and are perfectly familiar with the water front and shore lines of said town, and with the adjoining waters of Jamaica bay.

Second. That chapter 161 of the Laws of 1889, entitled "An Act in relation to local improvements in the town of Flatbush and the acquisition of the rights of a plank road company in said town," authorizes the construction by the street and sewer commissioners of the town of Flatbush, for whose creation and appointment said act provides of a sewerage system for said town to discharge the sewerage matter of said town into tide water. That said act does not in any respect provide for the method of construction of the sewer, or for the location of its outlet, except in the following general language to be found in section 4 of said act: "Such commissioners shall devise and make a plan for building one or more trunk sewers to take and discharge the sewage matter in such town into the tide water." That the whole matter of the construction and of the location of the outlet of said sewer for the discharge of such sewerage into tide water is in no way regulated by said act, and that there is nothing in the terms of said act which in any way limits the power or control which would otherwise be exercised by this board over the construction of said sewer and its outlet, within the limits of the town of Flatlands.

Third. That pursuant to the terms of said act, and in the course of the construction of said sewer, said commissioners have filed in the office of the clerk of the county of Kings, a plan of said sewer. That the town of Flatbush, whose sewage is to be conveyed to and discharged into tide water by the sewer thus to be constructed, is a town containing nearly 15,000 inhabitants. That according to said plan the sewage matter of said town is to be conveyed through a brick main sewer, sixty-six inches in diameter, constructed in and through Flatbush avenue in the towns of Flatbush and Flatlands to the shore line in the town of Flatlands, and thence for a distance of about thirteen hundred feet, through a wooden trunk or outfall sewer, whose dimensions are four feet by five and one-half feet, with a flat bottom, across the marsh land, which is submerged at high water, to a point on what is known as Mill creek, where the outlet of said sewer for the discharge of said sewage is to be located; and that said sewer has already been completed to a point within a short distance of such shore line and will soon be ready for use; that said Mill creek is one of the numerous narrow channels with very shallow banks extending through the marshes which adjoin the town of Flatlands on the west side of Jamaica bay. That the channel of said creek is extremely narrow and circuitous, and contains little over four feet of water at mean low tide. That on each side of the said creek are large areas of low land or salt water meadows covered with a thick growth of sea-grass, which lowlands are alternately exposed and covered more or less by tide water, the sea grass, however, being entirely submerged only during during brief periods of extraordinary high tides. That at the proposed outlet or terminus of said sewer the general direction of the channel of said Mill creek is at an angle of 45 degrees with the line of the sewer, and runs in an irregular course for about 5,700 feet to Garrittson's creek. That this latter creek is also shallow and its general direction is at an angle of about forty-five degrees with said mill creek and that it runs at that angle for about 5,000 feet to Dead Horse inlet which is between Coney Island and Barren Island. That from the mouth of Dead Horse inlet it is about 9,000 feet to the open sea outside of Rockaway Beach. That above the proposed sewer outlet said mill creek extends northerly through the marshes and lowlands for about 4,500 feet to an old dam, where a tide-mill formerly stood. That through the narrow sluiceway at that point there is some slight water connection with the open waters of Jamaica bay at a distance of about 6,000 feet, and through a net-work of irregular shallow channels. That this upper or northerly end of said mill creek is to all practical intents and purposes a cul-de-sac or dead end. That the general character of the lowlands, and of said channels through the same as aforesaid, is shown upon the charts of the United States geodetic and coast survey covering the particular portion of Jamaica bay here in question, which charts are referred to and made a part of this petition. That it is proposed to discharge the crude and unpurified sewage of the town of Flatbush into said mill creek, through said proposed outlet; and that a rough estimate will show that the faecal matter alone of a population of nearly 15,000 inhabitants, which it may be assumed that the town of Flatbush now contains would amount to upwards of one and a half tons per day, and upwards of 500 tons per annum.

Fourth. That should the outlet of said sewer be located as proposed, it will constitute an absolute and intolerable nuisance, as against the inhabitants of the town of Flatlands, irremediable as long as said sewer shall be used with said proposed outlet, and will unquestionably, in your petitioners' judgment and in the light of the common experience and knowledge of all persons familiar with the locality, greatly injure, to say the least, the interests of health and life among the people of the town of Flatlands, and of the adjoining communities bordering on that portion of Jamaica bay; and that the construction of said sewer and its outlet as proposed, within the limits of the town of Flatlands, as aforesaid, is a cause of danger and injury to life and health within the limits of the town of Flatlands and to the life and health of the inhabitants thereof.

Fifth. That there is absolutely no question among people having any knowledge whatsoever of the locality and of Jamaica bay, that said Flatbush sewer with its proposed outlet will be a damaging nuisance almost ruinous to the interests of health and life in the adjoining communities of the town of Flatlands, and that should said street and sewer commissioners and said town of Flatbush be permitted to construct said sewer and outlet as planned and proposed as aforesaid, in view of the elaborate character of the general sewerage system thus to be constructed, it would be a much more difficult matter to abate the nuisance when thus fully constructed and located than to prevent its construction as proposed, as a cause of danger and injury to the life and health of the inhabitants of the town of Flatlands.

Sixth. That in order to verify the common knowledge and belief in respect to the danger to the public health arising out of the construction of said sewer and its outlet as proposed, there has been made at the suggestion and request of your petitioners by experts in sanitary science and civil engineering a most careful and exhaustive examination of said sewer and its method of construction, and of the entire portion of Jamaica bay, adjoining the town of Flatlands, into which said sewage it is proposed shall be discharged as aforesaid. That careful and elaborate experiments to demonstrate the results of the discharge of said sewage as proposed, have been made by said experts, and that the result of such examination by said experts, is to confirm most emphatically the judgment and belief of your petitioners as aforesaid, that the construction of said sewer is a cause of danger and injury to the life and health of the inhabitants of the town of Flatlands. That as a result of the experiments and examination made by said experts in the light of the well settled principles of sanitary science governing [illegible] of sewers and the discharge of sewage matter [illegible] it has been demonstrated beyond question [illegible] said matters discharged from said sewer [illegible] of danger and injury to the public health; but that before any of said sewage matter could, even in the event of the filling up of the said channel and creek as aforesaid, reach the open sea, beyond Dead Horse inlet, it would necessarily oscillate to and fro in said Mill creek, as well as further down in Garrittson's and John's creeks as aforesaid, and would remain in these and other lateral and circuitous channels which exist in this portion of Jamaica bay, a very long time, in a putrefying and stale condition; that the prevailing winds in summer are from the south and southeast, and that therefore such stale and putrid sewage would necessarily pollute the air of the entire neighborhood for long distances, to the great injury of the health of the inhabitants of the adjoining communities of the town of Flatlands.

Seventh. That your petitioners and the other inhabitants of the town of Flatlands have been accustomed to cultivate oyster beds in, and to bathe in and to take fish from, the waters of Jamaica bay, and to use the same for boating purposes, and have valuable fishing, bathing and boating rights and privileges therein, and have expended large sums of money in preserving the same, and that should the outlet of said sewer be located as aforesaid, the filling up of that portion of Jamaica bay with the putrefying, crude and stale sewage matter from said sewer, will necessarily and unquestionably result in the total destruction of all fish life in said waters, or in the driving of the fish into other and healthier waters, and will necessarily destroy said rights and privileges in said oyster beds and said right of bathing, boating and fishing belonging to your petitioners and the other inhabitants of the said town of Flatlands.

Eighth. That the construction of said sewer and outlet is a cause of danger and a matter detrimental to the public health in the town of Flatlands, and that the town of Flatbush, and Henry Hesterburg, John D. Ranolf, James Ryan, Howard T. Montgomery and William Brown, who are the street and sewer commissioners of said town of Flatbush, appointed and acting as such under said act, are the occupants of the premises whereon such matter so detrimental to the public health exists as aforesaid; that prior to the planning and construction of said sewer and outlet as aforesaid, the town of Flatbush and said street and sewer commissioners, as your petitioners are informed and believe, did not, nor did either or any of them, make any proper or other investigation of the locality where said outlet is to be placed as aforesaid, for the purpose of determining whether or not such locality is a proper one for that purpose, or whether or not such outlet and the construction thereof will be a cause of danger and injury to the health of the inhabitants of the town of Flatlands; that your petitioners are prepared to establish and prove to the satisfaction of this Board the allegations and the matters of fact set forth in this petition, and do hereby offer to produce proper proof thereof before this Board, at any meeting thereof which may be called, and whenever an opportunity shall be furnished to your petitioners to demonstrate the truth of the allegations of this petition, and that there is ample judicial precedent for the action which your petitioners ask this Board to take hereon.

Ninth. That your petitioners therefore complain of the construction of said sewer and the location of the proposed outlet thereof, as aforesaid, as a matter detrimental to the public health in the town of Flatlands, and as a cause of danger and injury to life and health within the limits of the town of Flatlands, and to the life and health of the inhabitants of said town.

Wherefore, your petitioners pray, on behalf of themselves and of all other inhabitants of the town of Flatlands, that this Board will, under and pursuant to its general power and authority, take cognizance of the interests of health and life among the people of the town of Flatlands as affected by the construction of said sewer, and the location of the proposed outlet thereof in Jamaica bay, in said town as aforesaid; and that this Board will examine into the questions arising out of the construction of said sewer and of the outlet thereof, as matters affecting the interests of health and life among the inhabitants of said town, and as a cause of danger and injury to the health and life of said inhabitants; and that this Board will make, and will enforce, if necessary, by the injunction of a competent court, or by other judicial proceeding, such orders and regulations as may be required to prevent the construction and location of said sewer and its outlet, and the use thereof, for the disposition of the sewage of the town of Flatbush, as proposed, as a matter detrimental to the public health in the said town of Flatlands. And to this end your petitioners pray that this Board will assign a time and place for the hearing of this, your petitioners' complaint, and such evidence as your petitioners may then be able to produce in support thereof.

Terence F. Curley.
Walter Van Wyck.
Frederick Vanbych.
Anthony Graef.
James P. Hubbard.
Timothy I. Hubbard.
Albert H. Van Brunt.
Andrew Ditmas.
Nicholas W. Brown.
E. A. Hubbard.
John A. Vanderveer.
Charles Vanderveer.
Edwin Steinbach.
Edward Hornbostel.
H. Hornbostel.
Alfred Wiehl.
Eugene Widman.
F. T. Coleman.
L. W. T. Coleman.
A. B. Coleman.
J. M. Coleman.
E. Hornbostel.
James Kelly.
John R. Lott.
Simon B. Lott.
William Huffmire.
Harley Merry.
George Kennington.
Frederick H. Merry.
John Kavanaugh.
Lawrence Huffmire.

D. Whelan.
A. C. Grane.
John B. Lott.
C. Tyndall.
C. McCoy.
Smith Watts.
John Watts.
Patrick Grace.
William I. Koowenhoven.
John A. Bush.
John L. Ryder.
T. Gilfeather.
John Abrams.
William Raynor.
Willitt Raynor.
Charles Raynor.
Theodore Bergin.
John Erzinger.
J. B. Hendrickson.
W. H. Kowenhoven.
John Fleming.
Killiam Huffmire.
James Smallman.
Patrick Heffermen.
John C. Carson.
P. M. Vose.
Daniel Huffmire.
Calvin Huffmire.
William Huffmire.
Christian Kraft.
Jurien S. Lott.

Patrick Malaney.
Eugene Fitzgerald.
William Bush.
William Sheppard.
Michael Looney.
Oliver B. Strickland.
Joshua Stafford.
William R. Van Dyke.
Lawrence Heslin.
Jurien Lott.
Byron Whitcomb.
James Leary.
Cornelius W. Bennett.
Cornelius H. Dwyer.
Paul Fehr.
Geo. M. Janvrin.
Heinrich Hoffman.

EVARTS, CHOATE & BEAMAN,
Attorneys for Petitioners, 52 *Wall St., New York City.*

CITY AND COUNTY OF NEW YORK, *ss.:*

Terence F. Curley, being duly sworn, deposes and says that he is one of the petitioners in the foregoing petition, that he has subscribed the said petition and has read the same and knows the contents thereof; that the same is true to his own knowledge except as to the matters therein stated to be alleged on information and belief, and as to those matters he believes it to be true.

TERENCE F. CURLEY.

Sworn to before me this twenty-eighth day of July, 1891.

THOS. T. SHERMAN,
Notary Public, Westchester Co. (with cert. in N. Y. Co.).

SIGNATURES TO PETITION.

Additional Names Protesting Against the Discharge of Flatbush Sewer in Mill Creek, Flatlands Bay.

William Warren.
Richard Warren.
Isaac Warren.
Richard Huffmire.
Robert Smallman.
Edward Warren.
Benjamin Rantus.
David Smallman.
John Barlow.
Conrad Brenker.
John D. Glander.
A. W. Skidmore.
Richard McAvoy.
John H. Nolan.
Carl Ivers.
Thomas Yerks.
William Van Houten.
Bermil Van Houten.

Samuel Huffmire.
Henry Otterstedtt.
Martin R. Wanser.
John Moore.
Solomon Macy.
George Morrell.
Remsen Wanser.
Abram Wanser.
Albert Wanser.
Sam. Rumph.
John R. Denice.
Martin Van Dyke.
Albert Van Dyke.
Ira Mathews.
Albert N. Van Dyke.
John Bennett.
Peter W. Van Dyke.
Cornelius White.
John White.
W. H. Darnley.
William H. Raynor.
Thomas Powers.
Henry Smith.
Robert L. Crooke.
George Raynor.
Van Dyke Tindall.
F. Raynor.
Charles Jogle.
Paul Sohidee.
Daniel T. Wright.
C. S. Parker.
T. P. Delin.
Martin Guinan.
John Smith.
William Henry Mathews.
William S. Ford.
William H. Vreeland.

T. C. Rumph.
Jacob C. Rumph.
Joseph Krier.
Frederick Krier.
Richard V. Remsen.
Henry Lott.
Daniel Rowland.
Frank S. Snell.
Peter Grott, Jr.
Isaac Reinman.
W. S. Tromed, M. D.
Charles McCrodden.
Tunis Durland.
Christian Kruft.
Edward Kruft.
Joseph C. Kruft.
John Kruft.
John F. Seaman.
James M. McHugh.
Stephen Gosline.
Richard Wanser.
Abraham Morrison.
Abraham Wanser.
Charles Voorhees.
Joel Carman.
Elbert Abrams.
John H. Van Houten.
John Someken.
James Hall.
Ludwig Klee.
Adolph H. Haack.
Clairo Kapf.
Henry W. Schmeelk, Jr.
Henry C. Quaritias.
William Von Ahnen.
Aug. Von Ahnen.
William Biggs.

Fred. Huhe.
Isaac S. Davis.
F. A. Doebleder.
William H. Rogers.
E. W. Seaman.
R. Johnson.
G. Johnson.
H. Hefferman.
Andrew C. Imaught.
John R. Brundage.
John F. Schmette.
Henry A. Lemken.
Christian Quaritius.
George R. Krier.
Frederick W. Lemken.
John M. Van Houten.
John H. Mills.
David Schaaf.
John H. Bogart.
Albert Weber.
William N. Tinsdale.
John H. Schmeelk.
Siboth & Bro.
Daniel J. Van Houten.
Geo. W. Dixon.
J. J. Ryder.
Chas. Seaman.
John Schumacher.
Walter Ryder.
Charles E. Allen.
Geo. A. Morrison.
Abram M. Morrison.
H. Pitzep.
Geo. Abrams.
S. Smalley.
Mathias Gore.
T. Corrigan.
H. Mogher.
Geo. J. Dixon.
James Dickson.
James G. Bogart.
John O'Brien.
John Yerks.
Henry T. Rizly.
Joseph Biggs.
Edward Schiellein.
Emil Schiellein.
John Wright.
Steve Hanemy.
James Freestora, Jr.
Abram M. Remken.
Wm. C. Davis.
Geo. W. Gosline.
Charles Curdhell.
F. Winterberg.
Geo. Voorhees.
Abram Voorhees.
C. D. Bebensee.
Peter Schmeelk.
James Ruland.
H. F. Howell.
W. H. Smalling.
David Faust.
Charles H. Manz.
Ferdinand Moller.
Samuel D. Elbert.
Geo. Brown.
C. H. Kramer.
Richard Youmann.
Frank Feith.
Geo. W. Davis.
William Biggs.
John Biggs.
Geo. M. Young.

John Grimms.
W. A. Petset.
O. L. Jones.
Frank McCue.
Albert Carman.
Garrie H. Carman.
James S. Serene.
John Mathews.
William Begg.
Alfred Phillips.
James Powell.
William F. Morrisson.
Martin Morrisson, Jr.
Martin Morrisson, Sr.
John H. Abrams.
Victor White.
Elmer E. Abrams.
Joseph McCreddan.
John J. McLoughlin.
J. B. Brown.
John H. Bogart.
John A. Denton.
Charles Stilwell.
John F. White.
George Ganlin.
Fred. C. Fisher.
Wm. W. Carman.
John Morrisson.
Charles Morrisson.
David Voorle.
William Gorlin.
Walter C. Denton.
Samuel Carmin.
William Ryder.
Carl Peers.
William A. Davis.
S. E. Abrams.
Benjamin Ryder.
John Whittaker.
James Sellars.
William Morrisson.
William H. Lisk.
S. W. McDonald.
G. S. Braisted.
R. H. Loelmer.
C. Higney.
E. A. Chapman.
W. H. Chapman.
John W. Stubbs.
Otto Stoll.
John J. McCreddan.
John Garrison.
George Reed.
William Reed.
Peter Jackson.
Simon Johnson.
A. C. Moe.
Henry Garrison.
John H. Read.
Samuel J. Ferguson.
James Ferguson.
William Knipe.
Henry E. Hughes.
Henry L. Guiler.
James Cannute.
Michael Buckley.
Robert Kithcart.
Charles Ketellas.
James L. Savage.
Louis Deiner.
William Stiepe.
F. Schulz.
H. M. Storrer.

The Board of Health of the town of Flatlands replied to the petition through their counsel, as follows:

MORRIS & WHITEHOUSE, 193 MONTAGUE ST.,
BROOKLYN, *August* 20, 1891.

Messrs. EVARTS, CHOATE & BEAMAN:

Gentlemen.— Referring to the petition of some of the citizens of Flatlands, addressed to the board of health of that town, we would state on behalf of the board that they have carefully read and considered the same and although they concur in the opinion therein expressed, that the sewer in question when completed and put into use will create a nuisance, they are unable to find wherein they have any power to act in the premises until a nuisance exists. They do not understand that they have any power to act when a nuisance is apprehended merely. If when completed and put into use, the sewer proves to be a nuisance, the board will make use of every power it possesses to suppress it, and to that end will invoke the aid of the courts, if necessary.

Yours, etc.

MORRIS & WHITEHOUSE.

Whereupon the counsel for the petitioners referred the matter to the State Board of Health in the following letter, requesting that the State Board of Health act in the matter. The reports of the engineers employed by the petitioners to determine the facts in the case follow the letter of counsel:

MATTER OF FLATBUSH SEWER.

OFFICE OF EVARTS, CHOATE & BEAMAN, No. 52 WALL ST.,
NEW YORK, *September* 11, 1891.

Dr. LEWIS BALCH, *Secretary of the State Board of Health of New York, Albany, N. Y.:*

Sir.— We have, pursuant to the suggestion contained in your letter of June 20, 1891, submitted to the board of health of the town of Flatlands the inclosed petition, with the request that they assign a time for hearing the complaint therein contained, and, in answer to our petition and request, have received from Messrs. Morris & Whitehouse, of Brooklyn, the counsel for the town and for the local board of health, the inclosed letter:

You will observe that the local board refuse to act simply upon the ground that "they do not understand that they have any power to act when a nuisance is apprehended, merely," and that they insist upon waiting until the sewer shall be completed and "prove to be a nuisance." It is proper to remark, in passing, that the local board are mistaken in referring to the nuisance here as "apprehended, merely." It is matter of absolute certainty. In other words, the local board hold, without any judicial sanction (indeed, against positive adjudication, as we shall show), and purely of their own motion, without even the suggestion of an attempt to submit the matter to the courts, that, as a board of health, they have no authority to prevent a cause or matter of danger to the public health, but insist that they must wait until that danger has absolutely ripened, and has, perhaps, inflicted a pestilence, to say nothing of other injuries, upon the community. In our judgment this is trifling with matters of serious import. We cannot for one moment believe that the powers and functions of boards of health are so extremely limited.

Having had this definite word from the local board, we again most earnestly and respectfully refer the matter to you, in accordance with the suggestions in your letter of June 20, 1891, in which you say:

"If the board of Flatlands acts without further pressure from this board, it will not be necessary for us to call it formally together, as provided for. If it does not, then the call will issue, and further work be decided on."

You will further observe that the local board, speaking through its counsel, after stating that they have carefully read and considered this petition of the inhabitants of Flatlands, expressly state that "they concur in the opinion therein expressed, that the sewer in question, when completed and put into use, will create a nuisance."

In other words, the local board do not feel or express any doubt upon the subject, any more than do the experts who have examined the question on behalf of the inhabitants. They simply rely upon what they "understand" to be a lack of power to proceed at present, and refuse even to test that question of power in the usual way, by at once taking judicial proceedings to protect the public health, which, even in case of doubt as to their power, is certainly the only proper course for such a local board of health to adopt. They have no right to constitute themselves in a matter of such vital importance to the entire town, the ultimate tribunal for determining the extent of their powers. By proceeding in the usual way to protect the public health they incur no liability, either personally or on behalf of the town, and the courts will protect the rights of all concerned, should there be any controversy.

As to the facts of the matter, is appears by the petition, as well as by the judgment of the local board, that there is not the slightest doubt that the proposed sewer outlet in Jamaica bay for the Flatbush sewer, carrying the crude sewerage matter of nearly 15,000 inhabitants, will at once constitutute an absolute and intolerable nuisance the moment the sewer shall be put into operation. But we have not relied upon the judgment and knowledge of non-experts, although they have long been inhabitants of, and familiar with, the locality. We have employed, on behalf of the inhabitants (who have borne the entire expense), two of the most competent experts in this vicinity, and inclose to you herewith copies of their reports, which, in all respects, most fully and emphatically support our statements and contentions. We likewise send to you a chart, prepared by Mr. Croes, and accompanying his report, which is a reproduction of the United States Official Coast and Geodetic Survey, covering Jamaica bay, as carried out in detail and made applicable to this precise location and subject. On it, Mr. Croes has carefully charted out his series of floating experiments. It very graphically presents the entire subject, and fully exhibits the gravity of the situation which the inhabitants of this entire section are called upon to face, by the continuous construction of, or threats to construct, sewerage systems emptying into Jamaica bay. As this is an original chart we shall ask you kindly to return the same to us when you shall have completed its examination. About the facts, therefore, there is here no question. This sewer outlet for the discharge of the crude sewerage of 15,000 inhabitants is, as an absolute certainty, bound at once to become an intolerable nuisance to this community.

Upon the question of power, we understand from the terms of your letter of June twentieth last that the second deputy Attorney-General has no doubt. He simply holds that your Board "has not power to take direct action in the matter. It can order the local board of health of the town of Flatlands to examine into the subject and, if necessary, take such definite action as may be considered by this (your) Board required for the protection of the public health, under the provisions of subdivision 1, section 3 of chapter 270, Laws of 1885."

And there is, of course, no real doubt that the local board alone has full power. It would be an utter denial of all usefulness in local boards of health to hold that they have no power to prevent and do away with a "cause of danger or injury to life and health" such as is here presented, and that they must wait until the danger and injury themselves are absolutely at hand and at work upon the life and health of the community.

Subdivision 1 of section 3 of chapter 270 of the Laws of 1885 clearly provides that the State Board of Health may order the convening of the local board "to take certain definite proceedings upon matters concerning which said State Board or its president and secretary shall be satisfied that the action recommended by them is necessary for the public good," etc.

As to voluntary action by the local board, subdivision 4 of section 3 further prescribes the power and duty of that board to be, "to receive and examine into the nature of complaints made by any of the inhabitants concerning nuisances or causes of danger or injury to life and health within the limits of its jurisdiction."

That subdivision likewise confers power to order the destruction and removal of "conditions detrimental to life and health found to exist within the limits of its jurisdiction."

Subdivision 6 of the same section declares that the local board may make orders and regulations in special or individual cases, among other things, "concerning all other matters in their judgment detrimental to public health."

And in case of violations of such orders and regulations, subdivision 9 of section 3 authorizes them to maintain actions "to restrain by injunction such violations, or otherwise to enforce such orders or regulations."

But whatever the power of the local board may be when exercised of its own motion, it is clear that when set in motion by the State Board, its power is as general as it is possible for language to make it. By subdivision 1 of section 3, as we have noted, your Board, or its president and secretary, may convene the local board, to take certain definite proceedings upon "matters concerning which" your Board, or its president and secretary, "shall be satisfied that the action recommended by them is necessary for the public good," etc. Nothing could be broader. It is only necessary that your Board, or its president and secretary, should be "satisfied" as to the necessity of the action which it recommends as to any "matters" whatsoever. There is no limitation affecting the question before us. And very properly no limitation, for the high and extraordinary office of your Board is to "take cognizance of the interests of health and life among the people of the State."

(Laws 1880, chapter 322, section 6.)

It seems to us, therefore, that, while it would be an absolute stultification of the powers of boards of health in general, to hold that they have no power to act in a case like the present, it would be doubly so thus to hold with reference to the powers of the State Board, as exercised through the local board. The express terms of the statute forbid any such narrow construction. The counsel for the local board have evidently not considered this power of the State Board, or this view of the question.

We presume the counsel for the local board have been misled by cases similar to that of Morgan v. City of Binghamton (102 N. Y. 500), an action brought by a private individual against the city of Binghamton to enjoin the construction of a sewer, on the ground that it might, at some time in the dim future, prove injurious to him. The evidence as to the character of the prospective danger from the sewer was wholly uncertain, and the injury itself doubtful, eventual and contingent.

There it appeared upon the trial that the plaintiff would be damaged, if at all, only through the poisoning and infection of the air, "and," as the court said, "not from any discharge of sewage upon his lands, or any deposit of it there by the river currents. The findings plainly disclose two characteristics of this apprehended danger. It is not imminent, and it is wholly contingent and not inevitable. No immediate danger exists. It is found to be possible, within one or two years, but not certain to occur sooner than in three years. Every finding which prognosticates threatened evil is qualified by the phrase 'in time' which limits it to some indefinite future period, and when the findings seek to fix that, they postpone it, as a certain danger, for three years." (102 N. Y., at p. 503.)

The Court further said:

"The contingency as to it is further made to 'depend very much upon the quantity of water used in the sewer.' The twenty-sixth finding of the trial judge explicitly declares that 'the pernicious effects of the depositing of sewerage matter at this point and the time when such will be felt are dependent upon various uncertain future things,' and this shows that the evil itself, as well as the date of its appearance, are alike contingent and not inevitable. The danger, therefore, which can alone support this injunction, is in the air of an uncertain and indefinite future. Its possible coming rests upon opinion and speculation. It is both doubtful and remote." (102 N. Y., at p. 503.)

And again the Court said:

"For three years at least, and very probably for a longer period, the findings leave it certain that no evil will result." (102 N. Y., at p. 504.)

Accordingly, the court held in that case that the injury was altogether too contingent, remote and uncertain to warrant the granting of an injunction restraining the making of the municipal improvement in question. It will be observed that the only reason advanced by the court for refusing an injunction, even to this private litigant, was the absolutely remote, uncertain and contingent character of the alleged prospective injury.

It is hardly necessary to point out the utter inapplicability of the principle advanced in this case upon which, or upon the principle of which, the local board and its counsel must necessarily have relied. In the present case, it is absolutely certain, beyond any peradventure or question, that this Flatbush sewer outlet for crude sewage, in and overspreading Jamaica bay, will be, when put into operation, at once an intolerable nuisance and a cause of danger and injury to the public health. Here there is no doubt, there is no uncertainty, there is no remote period of time for the beginning of the danger. It is imminent, and will be upon the community the moment the sewer is completed. No language can be stronger than that employed by the inhabitants of the town (supported by the local board of health), and by the very competent experts who have examined the subject, in connection with the graphic illustration of the matter presented by Mr. Croes' chart. Besides, the case last cited and the principle upon which it is based have reference solely to the rights of individuals. The case would wear an entirely different aspect, were it one in which a public body, a board of health, was seeking to protect the public health, in the exercise of statutory powers as far-reaching as those we have just been considering. And so it has been held.

There is absolute judicial precedent for the action which the local board, independently of any action of the State Board, was here asked to take. In the fall of 1887, the board of health of the city of Syracuse, acting pursuant to a petition of citizens, and in marked contrast to the non-action of the Flatlands board, applied, through Mr. P. B. McLennan, its learned and experienced counsel, to the Special Term of the Supreme Court (Judge Vann), sitting in Syracuse, for an injunction restraining that city and its officials from constructing a certain sewer, which the local board alleged was bound to constitute a nuisance, and was a cause of danger and injury to the public health of the city. Here, it will be observed, the local board of health of Syracuse was brought in direct conflict with the other officials of that town, who were expressly authorized to construct the sewer in that city. In the present instance, the board of health of Flatlands is simply called

We beg to call attention to the extremely large number of signatures to our petition. It includes a very large proportion of the inhabitants of the entire township of Flatlands.

Yours very truly.

EVARTS, CHOATE & BEAMAN.

RELATING TO FLATBUSH SEWER OUTLET.

J. JAMES R. CROES, M. AM. SOC. C. E., M. INST. C. E., CIVIL ENGINEER, NO. 13 WILLIAM ST., NEW YORK CITY,
NEW YORK, *July* 15, 1891.

Messrs. EVARTS, CHOATE & BEAMAN, *No.* 52 *Wall Street, New York City:*

Sirs.— I have the honor to present the result of examinations made at your request to determine the effect upon the adjacent riparian lands of the proposed discharge of the sewage of Flatbush through the sewer now in course of construction, into mill creek, in Flatlands, at the easterly end of Flatbush avenue.

According to the plans on file in the county clerk's office in Brooklyn, the proposed sewer is to be built of brick to the shore line, and thence for a distance of about 1,300 feet is to be carried by a wooden trunk across the marsh land which is submerged at high water, and to discharge into what is known as mill creek, which is one of the narrow channels through the marshes which adjoin the town of Flatlands on the west side of Jamaica bay from Canarsie to Rockaway inlet. At the terminus of the proposed sewer, the general direction of the channel is at an angle of forty-five degrees with the line of the sewer, and runs in an irregular course for about 5,700 feet to Garretson's creek. The general direction of this creek is at an angle of about forty-five degrees with mill creek for 5,000 feet to Dead Horse inlet, which is between Coney Island and Barren Island. From the mouth of this inlet it is about 9,000 feet to the open sea outside of Rockaway Beach.

Above the proposed sewer outlet, mill creek extends northerly in the marshes for about 4,500 feet to an old dam where a tide-mill formerly stood. Through the sluiceway in this dam, which is now open, there is water communication with Jamaica bay through 6,000 feet of irregular channels.

At low tide, the salt meadows on each side of mill creek are exposed, and the water is confined to narrow channels through the marshes. At high water, the marshes are entirely submerged. The extent of the marshes and the channels through them is shown on the accompanying map prepared from the United States coast survey charts.

The question to be determined in this case is whether the crude sewage discharged from the proposed sewer, which is to carry the drainage from a population numbering at the present time about 12,000 and rapidly growing, will be carried out to sea by the tidal currents, or will be retained within the creeks and diffused through the marsh lands, and by exposure at low tide become offensive, and a nuisance to the adjoining upland population.

To aid in determining this question, a series of experiments was made with floats in the channel at various stages of the tide. The floats used were cylindrical rods, thirty-two inches long, loaded at one end so as to be submerged about twenty-eight inches. On the accompanying map, the course traveled by these floats is indicated, with notes of the times occupied by the floats in traveling between several points.

The result of these float experiments may be thus summarized: When the tide is ebbing, the greatest velocity of the current in Mill creek is about one mile an hour. The tendency of any matter deposited in the channels at the mouth of the proposed sewer is towards the shores of the creek. Out of seven floats placed in the channels at different stages of the ebb tide on July seventh, not one floated clear of the banks as far as Garretson's creek. Every one was stranded on one side or the other within the first mile below the sewer outlet. Such of them as were picked up and replaced in the channel continued their course towards the ocean. One of these was stranded on the bar off Coney island four hours after it started from the sewer outlet.

Of the four floats placed in the channel at different stages of the ebb tide on July thirtieth, only one reached Garretson's creek. This float was immersed about two hours after high tide. The three other floats were all stranded on the meadow within 2,000 feet of the starting place.

On June thirtieth, seven floats were put in the stream at different stages of the flood tide. All of them, when first put in, traveled up stream in Mill creek from 500 to 1,000 feet, and when the tide had risen sufficiently to allow them to pass over the meadows, all of them were stranded within 450 feet of the present end of Flatbush avenue.

Floats placed in the channels of Garretson's and Mill creeks within one hour after low water, traveled up stream. One of these floats which was placed in Garretson's creek on July first was found floating within 1,000 feet of where it had been put in, six days afterwards.

Out of eleven floats placed in the channel of Mill creek at the proposed sewer outlet on June thirtieth, between 9.30 a. m. and 5 p. m., all but one stranded on the meadows within 2,000 feet of the starting place. This series of observations extended from the time of low water to two hours after high water.

The conclusion to be drawn from these experiments is that all solid matters, and nearly all liquid matters discharged from the sewer outlet at the proposed point of outfall, will be retained in Mill creek, and will be distributed over the marshes bordering the creek, and will create a nuisance to the adjacent upland: First, by the effluvia arising from the matter deposited on the marshes, and exposed at low water; and, secondly, by gradually filling up the channel of the creek. When the waters of this creek shall have become thoroughly fouled and saturated with sewage matter, a certain proportion of such matter will doubtless be carried out towards the ocean. The direction of the currents at the mouth of the inlet indicates that the floating matters will be carried towards Coney island beaches, and create a nuisance there.

I am, therefore, of the opinion that the location selected for the terminus of the Flatbush avenue sewer is not only injudicious but is also positively detrimental to health, and contrary to public policy and private rights. This opinion was reached in the first place from examination of the locality, and consideration of the well-established principles governing the flow of water in tidal channels such as exist in the vicinity of the proposed outlet of the sewer, and from the unanimous testimony of persons familiar with the territory, to the effect that floating bodies set adrift in the creeks do not go out to sea but are carried back and forth by the tides among and over the meadows.

The float experiments I have made, corroborate and confirm these principles and statements of fact.

J. J. R. CROES,
Consulting Engineer.

OFFICE OF WM. PAUL GERHARD,
CONSULTING ENGINEER FOR SANITARY WORKS,
36 UNION SQUARE, EAST, NEW YORK CITY.

Messrs. EVARTS, CHOATE & BEAMAN, *Counselors at law.*

Gentlemen.— At your request I have, on June twenty-fifth and again on July first and July seventh, visited Flatbush and have made a careful examination of the place at which the town of Flatbush, L. I., proposes to locate the outlet of its main outfall sewer. My inspection was not, however, confined to the point of Mill creek, where it is proposed to discharge the sewage of the town of Flatbush, but included the whole course of Mill creek from the former mill dam to the junction of Mill and Garretson creeks, and further on the lower part of Garretson's creek, including a portion of John's creek down to the Dead Horse inlet.

It appears from the map of the Flatbush avenue sewer, as filed in the county clerk's office in Brooklyn, that the whole of the sewage proper (excluding storm water) of the town of Flatbush, which is estimated to have a population of 15,000, is to be conveyed through a brick main sewer, sixty-six inches in diameter, to a wooden trunk or outfall sewer, four feet by five and one-half feet, with flat bottom. This outfall according to the map is located in a straight continuation of the line of Flatbush avenue, and will continuously discharge the unpurified sewage below low-water level into the upper part of Mill creek. This creek is really nothing but a narrow inlet from the sea, a tidal estuary. Opposite the proposed sewer outfall the creek is about 200 feet wide at mean low tide, and has a very narrow and circuitous channel, not more than four feet deep, with very shallow banks, and is almost closed in several places by sand-bars. On either side of the creek are large areas of low land, or salt water meadows, covered with a thick growth of sea grass. These low lands are alternately exposed and covered more or less by water, the sea grass being entirely submerged only during brief periods of extraordinary high tides.

The upper end of Mill creek, which extends approximately 1,000 yards above the proposed sewer outlet to the Mill dam bridge forms a cul-de-sac or dead end, and has practically no connection with the waters of Jamaica bay.

It is a common practice to get rid of town sewage by discharging it directly, i. e., without any previous purification, into a large body of water, either a running stream, or a tidal estuary or into the ocean, and where the volume of water of the stream is sufficient to render sewage innocuous by dilution, or where there is a rapid and strong current to carry the sewage completely away to such a distance that no part of the sewage returns to be deposited upon the flats and to pollute the shores, this method, usually called crude disposal, can not be objected to on sanitary grounds.

The proposed Flatbush avenue outfall sewer contemplates such a crude disposal of the sewage of a town of 15,000 inhabitants into the upper end of Mill creek, and the question submitted to me is whether or not the method selected, and the location of the outfall sewer, is a proper one.

My answer is: Emphatically no. The outfall sewer is not, in my judgment, properly located, and if it should be constructed where and as contemplated, it is safe to predict that before long a formidable nuisance would be created, resulting in great and irreparable damage to the interests of the adjacent property owners, and of the fishing and oyster-bed interests, and this for the following reasons:

Crude and unpurified sewage discharged continuously into the upper end of Mill creek must float backward and forward with every change of the tide, and its impurities would necessarily be deposited about the outfall sewer, and strand along the shores. During the incoming tide floating particles of solid sewage and suspended flocculent impurities would be driven, by the tide, by strong winds and by eddies, against the flats and deposited in the high grass of the salt water meadows in the vicinity of the outfall and the same would happen during the ebb tide along the shores, on the numerous sand bars and in the coves of still water of Mill creek.

I have not hastily arrived at this conclusion, but have, jointly with Mr. J. James R. Croes, member American Society Civil Engineers, made a number of careful float experiments, which demonstrated conclusively that sewage discharged at the proposed outfall would not be carried, as it should be, quickly and continuously out to deep water by tidal currents, but would, instead, oscillate to and fro in Mill creek, as well as farther down in Garretson's and John's creeks, and would remain in these creeks a long time before getting out to sea. In connection herewith, two facts should be borne in mind, first, that on account of its lesser specific gravity, sewage will float on top of sea water for a greater period of time than when discharged into fresh water, and, second, that salt water has a tendency to delay the oxidation and nitrification of organic matter.

For all these reasons, the outfall sewer, if located as now proposed, would very injuriously affect the adjacent land owners and surrounding property. Roughly estimated the faecal matter alone of a population of 15,000 inhabitants would amount to about one and two-thirds tons per day, or about 600 tons per annum. These solid organic matters deposited along the shores and in the vicinity of the sewer outfall would necessarily soon decompose, particularly when exposed on the flats at low tide to the heat of the summer's sun, and thus create offensive gases, dangerous to health. The prevailing winds in summer time are south and southeast, and would have a tendency to pollute the air of the neighborhood for long distances and endanger the health of the occupants of summer residences along the shores. Property would thereby depreciate in value, hence the outfall sewer would not only work harm, but also great injury to land owners. The boating interests would also suffer, and in summer time pleasure boats in particular would avoid waters so highly polluted. Bathing in the creek would be rendered impossible, and the small bathing beach at the foot of the long pier would be defiled. Moreover, there are extensive oyster beds along Mill and Garretson's creek, and the business of their owners would practically be entirely destroyed. Even the fishing would be injured to a great extent, for although it is generally accepted that fish feed and thrive upon sewage, such is only the case where sewage is discharged in a fresh condition, while it is much more probable that some of the sewage matters would arrive and be discharged at the outlet in a putrid condition, and it is well known that putrid sewage kills fish.

Although I am not called upon to suggest a remedy, I would state that there are several ways in which the difficulty can be overcome. One way would be to have the sewage of the town of Flatbush purified and rendered innocuous either by application upon land, or by some method of chemical purification, at or near the outskirts of the town of Flatbush. The purified sewage could be discharged without injury into the waters of mill creek through the proposed outfall sewer.

Another method would be to carry the outfall sewer sufficiently far out into deep water to a point where strong outward or lateral tidal currents would at all times carry the sewage out to sea.

A third method would be to build a tank sewer or sewage reservoir from which the sewage would be discharged periodically only during the first hours, or better still, during the middle third of the outgoing tide. If this latter method were adopted it would be advisable to locate the outfall at least as far down as the junction of Mill and Garretson's creeks or else at the junction of Mill and John's creeks. It would not be safe, in my judgment, to adopt this scheme of storage of sewage and intermittent discharge during the first hours of outgoing tide at the present proposed outfall, as the location is far too near the head of Mill creek, and would still result in a pollution and defilement of the shores.

Respectfully submitted.

WM. PAUL GERHARD,
Consulting Engineer for Sanitary Works.

July 10, 1891.

The following communication was also received from the board of health of the adjoining town of Gravesend.

Whereas, This board having learned that the town of Flatbush, in its construction of a system of sewers, proposes to have outlet of same at the head of Mill creek, a stream of water separating the towns of Gravesend and Flatlands, and which said stream flows into the waters of Sheepshead bay, which said bay and creek contains valuable oyster beds of both natural and planted growth, and as the tide ebbs, a greater portion of said beds are exposed and,

Whereas, The town of Gravesend, through its board of health, has expended the sum of $550,000 to perfect a system of sewers which by means of chemical and mechanical appliances, in Caissons and outbuildings, the sewerage matter received therein is entirely disinfected, and the solid and liquid matter separated; no portion of which is permitted to flow into the waters in and adjacent to the town of Gravesend.

Whereas, The town of Flatbush with the system under construction, has devised no means to dispose of said sewerage matter, except by emptying the same into the aforesaid creek leading into Sheepshead bay, which at high tide overflows the banks and as the tide recedes, will leave a deposit of solid matter from said sewer, upon the land so overflowed; therefore, be it

Resolved, That the State Board of Health be requested to examine into said matter, and if in their opinion, the same will become a nuisance to the town of Gravesend, and detrimental to the public health, to take the necessary steps which in their judgment, will cause the same to be abated, and the secretary of this board be requested to communicate with the board of health of the town of Flatlands, and inform them of the action of this board, and its full co-operation with them to cause the outlet of said sewer to be so constructed so as not to be a nuisance as before stated, and a copy of these preambles and resolutions be transmitted to the State Board of Health, and the board of health of the town of Flatlands.

OFFICE OF THE SECRETARY OF THE BOARD OF HEALTH,
GRAVESEND, *September* 2, 1891.

To Secretary State Board of Health:

SIR.— You are hereby notified that a meeting of the board of health of the town of Gravesend, Kings county, held on the third day of August, 1891, at the office of the board of health, a resolution, of which the following is a copy, was adopted:

(Attest.) JOHN L. VOORHIES,
Secretary of the Board of Health, Town of Gravesend.

ALBANY, *September* 3, 1891.

To JOHN L. VOORHIES, Esq., *Secretary Board of Health, Town of Gravesend, N. Y.:*

SIR.— We are in receipt of your favor of the second instant, transmitting a copy of a resolution of your board, adopted on the third of August, in reference to the proposition of the town of Flatbush to discharge its sewers at the head of Mill creek. We shall lay the resolution of your board before the meeting of the State Board of Health on the eighth instant in New York city.

Very respectfully your obedient servant.

FREDERICK CARMAN,
Assistant Secretary.

The State Board of Health, in view of the facts and communications, preceding and referred to, decided to call the board of health of Flatlands together, to take action on the matter. The following call for such meeting was therefore issued:

ALBANY, *September* 21, 1891.

To the President Board of Health, Town of Flatlands, Kings Co., N. Y.:

SIR.— Certain matters, relating to the proposed discharge of the sewage of Flatbush into Mill creek, having been laid before this board; and the petition of a number of the residents of the town of Flatlands to your board relating to the same matter, you are hereby notified and requested, as provided for in subdivision 1, of section 3, of chapter 270, of the Laws of 1885, to convene the board of health of the town of Flatlands, Kings county, at Canarsie, on the twenty-fourth day of September, 1891, at 12 o'clock, m., to take certain definite proceedings upon matters necessary for the public good, and which are within the jurisdiction of the said board.

Very respectfully your obedient servant.

THOS. NEWBOLD,
President.

LEWIS BALCH,
Secretary and Executive Officer.

Meeting of the board of health of the town of Flatlands, Kings county, N. Y., held at the office of the town clerk, on September 24, 1891.

Present — Supervisor Richard L. Baisley, Esq., president.

Members: John S. Schenck, Esq., Hon. John M. Wilson, Hon. William H. Thomas, Elias Hendrickson, Esq., John C. Matthews, Esq., Nicholas W. Brown, Esq.

Lewis Balch, M. D., Secretary State Board of Health.

Messrs. Evarts, Choate & Beaman (by Mr. Rowe), representing property owners.

C. W. Hunt, Esq., civil engineer.

J. J. R. Croes, Esq., civil engineer.

The meeting was called to order by the president.

Dr. Balch stated that complaint had been made to the State Board of Health of a nuisance about to be created by the discharge of the Flatbush sewer into Mill creek, and that the attention of the board of health of Flatlands was called to the matter, and they were asked to prevent the creation of this nuisance, and he understood that the local board, under advice of counsel, had come to the conclusion that they had no power to prevent the creation of the nuisance, but had power to abate the nuisance when one existed.

Mr. Balch here read the report of William Paul Gerhard, Esq., as follows:

OFFICE OF WM. PAUL GERHARD,
CONSULTING ENGINEER FOR SANITARY WORKS,
36 UNION SQUARE, EAST, NEW YORK CITY.

Messrs. EVARTS, CHOATE & BEAMAN, *Counselors at law:*

Gentlemen.— At your request I have, on June twenty-fifth, and again on July first and July seventh, visited Flatbush, and have made a careful examination of the place at which the town of Flatbush, L. I., proposes to locate the outlet of its main outfall sewer. My inspection was not, however, confined to the point of Mill creek, where it is proposed to discharge the sewage of the town of Flatbush, but included the whole course of Mill creek from the former Mill dam to the junction of Mill and Garretson's creeks, and further on the lower part of Garretson's creek, including a portion of John's creek, down to the Dead Horse inlet.

It appears from the map of the Flatbush avenue sewer, as filed in the county clerk's office in Brooklyn, that the whole of the sewer proper (excluding storm water) of the town of Flatbush, which is estimated to have a population of 15,000, is to be conveyed through a brick main sewer, sixty-six inches in diameter, to a wooden trunk or outfall sewer, four feet by five and one-half feet, with flat bottom. This outfall, according to the map, is located in a straight continuation of the line of Flatbush avenue, and will continuously discharge the unpurified sewage below low-water level into the upper part of Mill creek. This creek is really nothing but a narrow inlet from the sea, a tidal estuary. Opposite the proposed sewer outfall the creek is about 200 feet wide at mean low tide, and has a very narrow and circuitous channel, not more than four feet deep, with very shallow banks, and is almost closed in several places by sand-bars. On either side of the creek are large areas of low land, or salt water meadows, covered with a thick growth of sea grass. These low lands are alternately exposed and covered more or less by water, the sea grass being entirely submerged only during brief periods of extraordinary high tides.

The upper end of Mill creek, which extends approximately 1,000 yards above the proposed sewer outlet to the Mill dam bridge forms a cul-de-sac or dead end, and has practically no connection with the waters of Jamaica bay.

It is a common practice to get rid of town sewage by discharging it directly, i. e., without any previous purification, into a large body of water, either a running stream, or a tidal estuary or into the ocean, and where the volume of water of the stream is sufficient to render sewage innocuous by dilution, or where there is a rapid and strong current to carry the sewage completely away to such a distance that no part of the sewage returns to be deposited upon the flats and to pollute the shores, this method, usually called crude disposal, can not be objected to on sanitary grounds.

The proposed Flatbush avenue outfall sewer contemplates such a crude disposal of the sewage of a town of 15,000 inhabitants into the upper end of Mill creek, and the question submitted to me is whether or not the method selected, and the location of the outfall sewer, is a proper one. My answer is emphatically no. The outfall sewer is not, in my judgment, properly located, and if it should be constructed where and as contemplated, it is safe to predict that before long a formidable nuisance would be created resulting in great and irreparable damage to the interests of the adjacent property owners, and of the fishing and oyster bed interests, and this for the following reasons:

Crude and unpurified sewage discharged continuously into the upper end of Mill creek must float backward and forward with every change of the tide, and its impurities would necessarily be deposited about the outfall sewer, and strand along the shores. During the incoming tide floating particles of solid sewage and suspended flocculent impurities would be driven, by the tide, by charge of the Flatbush sewer into Mill creek, and that the attention of the board of health of Flatlands was called to the matter, and they were asked to prevent the creation of this nuisance, and he understood that the local board, under advice of counsel, had come to the conclusion that they had no power to prevent the creation of the nuisance, but had power to abate the nuisance when one existed.

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I have not hastily arrived at this conclusion, but have, jointly with Mr. James R. Croes, Member American Society of Civil Engineers, made a number of careful float experiments, which demonstrated conclusively that sewage discharged at the proposed outfall would not be carried, as it should be, quickly and continuously out to deep water by tidal currents, but would instead oscillate to and fro in Mill creek, as well as farther down in Garretson's and John's creeks, and would remain in these creeks a long time before getting out to sea. In connection herewith two facts should be borne in mind; first, that on account of its lesser specific gravity sewage will float on top of sea water for a greater period of time than when discharged into fresh water; and, second, that salt water has a tendency to delay the oxidation and nitrification of organic matter. For all these reasons the outfall sewer, if located as now proposed, would very injuriously affect the adjacent land owners and surrounding property. Roughly estimated, the fecal matter alone of a population of 15,000 inhabitants would amount to about one and two-thirds tons per day, or about 600 tons per annum. These solid organic matters deposited along the shores and in the vicinity of the sewer outfall would necessarily soon decompose, particularly when exposed on the flats at low tide to the heat of the summer's sun, and thus create offensive gases, dangerous to health. The prevailing winds in summer time are south and southeast, and would have a tendency to pollute the air of the neighborhood for long distances and endanger the health of the occupants of summer residences along the shores. Property would thereby depreciate in value; hence, the outfall sewer would not only work harm but also great injury to land owners. The boating interests would also suffer, and in summer time pleasure boats in particular would avoid waters so highly polluted. Bathing in the creek would be rendered impossible, and the small bathing beach at the foot of the long pier would be defiled. Moreover, there are extensive oyster beds along Mill and Garretson's creeks, and the business of their owners would practically be entirely destroyed. Even the fishing would be injured to a great extent for, although it is generally accepted that fish feed and thrive upon sewage, such is only the case where sewage is discharged in a fresh condition, while it is much more probable that some of the sewage matters would arrive and be discharged at the outlet in a putrid condition, and it is well known that putrid sewage kills fish.

Although I am not called upon to suggest a remedy, I would state that there are several ways in which the difficulty can be overcome. One way would be to have the sewage of the town of Flatbush purified and rendered innocuous either by application upon land, or by some method of chemical purification, at or near the outskirts of the town of Flatbush. The purified sewage could be discharged without injury into the waters of Mill creek through the proposed outfall sewer.

Another method would be to carry the outfall sewer sufficiently far out into deep water to a point where strong outward or lateral tidal currents would at all times carry the sewage out to sea.

A third method would be to build a tank sewer or sewage reservoir from which the sewage would be discharged periodically only during the first hours, or better still, during the middle third of the outgoing tide. If this latter method were adopted it would be advisable to locate the outfall at least as far down as the junction of Mill and Garretson's creeks or else at the junction of Mill and John's creeks. It would not be safe, in my judgment, to adopt this scheme of storage of sewage and intermittent discharge during the first hours of outgoing tide at the present proposed outfall, as the location is far too near the head of Mill creek, and would still result in a pollution and defilement of the shores.

Respectfully submitted.

WM. PAUL GERHARD,

Consulting Engineer for Sanitary Works.

July 10, 1891.

Dr. Balch also read report of J. J. R. Croes, Esq., as follows:

RELATING TO FLATBUSH SEWER OUTLET.

J. JAMES R. CROES, M. AM. SOC. C. E., M. INST. C. E., CIVIL
ENGINEER, NO. 13 WILLIAM ST., NEW YORK CITY,
NEW YORK, *July* 15, 1891.

Messrs. EVARTS, CHOATE & BEAMAN, *No.* 52 *Wall St., New York City:*

Sirs.—I have the honor to present the result of examinations made at your request to determine the effect upon the adjacent riparian lands of the proposed discharge of the sewage of Flatbush through the sewer now in course of construction, into Mill creek in Flatlands at the easterly end of Flatbush avenue.

According to the plans on file in the county clerk's office in Brooklyn, the proposed sewer is to be built of brick to the shore line, and thence for a distance of about 1,300 feet is to be carried by a wooden trunk across the marsh land which is submerged at high water, and to discharge into what is known as Mill creek, which is one of the narrow channels through the marshes which adjourn the town of Flatlands on the west side of Jamaica bay from Canarsie to Rockaway inlet. At the terminus of the proposed sewer, the general direction of the channel is at an angle of forty-five degrees with the line of the sewer, and runs in an irregular course for about 570 feet to Garretson's creek. The general direction of this creek is at an angle of about forty-five degrees with Mill creek for 5,000 feet to Dead Horse inlet, which is between Coney island and Barren island. From the mouth of this inlet it is about 9,000 feet to the open sea outside of Rockaway beach.

Above the proposed sewer outlet, Mill creek extends northerly in the marshes for about 4,500 feet to an old dam where a tide-mill formerly stood. Through the sluiceway in this dam, which is now open, there is water communication with Jamaica bay through 6,000 feet of irregular channels.

At low tide, the salt meadows on each side of Mill creek are exposed, and the water is confined to narrow channels through the marshes. At high water, the marshes are entirely submerged.

The extent of the marshes and the channels through them is shown on the accompanying map prepared from the United States coast survey charts.

The question to be determined in this case is whether the crude sewage discharged from the proposed sewer, which is to carry the drainage from a population numbering at the present time about 12,000 and rapidly growing, will be carried out to sea by the tidal currents or will be retained within the creeks and diffused through the marsh lands, and by exposure at low tide become offensive, and a nuisance to the adjoining upland population.

To aid in determining this question, a series of experiments was made with floats in the channel at various stages of the tide. The floats used were cylindrical rods, thirty-two inches long, loaded at one end so as to be submerged about twenty-eight inches. On the accompanying map, the course traveled by these float is indicated, with notes of the times occupied by the floats in traveling between several points.

The result of these float experiments may be thus summarized: When the tide is ebbing, the greatest velocity of the current in Mill creek is about one mile an hour. The tendency of any matter deposited in the channels at the mouth of the proposed sewer is towards the shores of the creek. Out of seven floats placed in the channels at different stages of the ebb tide on July seventh, not one floated clear of the banks as far as Garretson's creek. Every one was stranded on one side or the other within the first mile below the sewer outlet. Such of them as were picked up and replaced in the channel continued their course towards the ocean. One of these was stranded on the bar off Coney island four hours after it started from the sewer outlet.

Of the four floats placed in the channel at different stages of the ebb tide on June thirtieth, only one reached Garretson's creek. This float was immersed about two hours after high tide. The three other floats were all stranded on the meadow within 2,000 feet of the starting place.

On June thirtieth seven floats were put in the stream at different stages of the flood tide. All of them, when first put in, traveled up stream in Mill creek from 500 to 1,000 feet, and when the tide had risen sufficiently to allow them to pass over the meadows, all of them were stranded within 450 feet of the present end of Flatbush avenue.

Floats placed in the channels of Garretson's and Mill creeks within one hour after low water, traveled up stream. One of these floats which was placed in Garretson's creek on July first was found floating within 1,000 feet of where it had been put in, six days afterwards.

Out of eleven floats placed in the channel of Mill creek at the proposed sewer outlet on June thirtieth, between 9.30 a. m. and 5 p. m., all but one stranded on the meadows within 2,000 feet of the starting place. This series of observations extended from the time of low water to two hours after high water.

The conclusion to be drawn from these experiments is that all solid matters, and nearly all liquid matters, discharged from the sewer outlet at the proposed point of outfall, will be retained in Mill creek, and will be distributed over the marshes bordering the creek, and will create a nuisance to the adjacent upland. First, by the effluvia arising from the matter deposited on the marshes, and exposed at low water; and, secondly, by gradually filling up the channel of the creek. When the waters of this creek shall have become thoroughly fouled and saturated with sewage matter, a certain proportion of such matter will doubtless be carried out towards the ocean. The direction of the currents at the mouth of the inlet indicates that the floating matters will be carried towards Coney island beaches, and create a nuisance there.

I am, therefore, of the opinion that the location selected for the terminus of the Flatbush avenue sewer is not only injudicious but is also positively detrimental to health, and contrary to public policy and private rights. This opinion was reached in the first place from examination of the locality, and consideration of the well-established principles governing the flow of water in tidal channels such as exist in the vicinity of the proposed outlet of the sewer, and from the unanimous testimony of persons familiar with the territory, to the effect that floating bodies set adrift in the creeks do not go out to sea but are carried back and forth by the tides among and over the meadows.

The float experiments I have made corroborate and confirm these principles and statements of fact.

J. J. R. CROES,
Consulting Engineer.

Dr. Balch.— Now Mr. Croes has a map here in relation to this matter, showing the points where he put in these floats, and the result of his experiments. [Referring to map.] Here, as I understand it, is the outlet fall of the sewer?

Mr. Croes.— Yes, sir. The direction of Flatbush avenue is shown by this yellow line on the map, that shaded portion there. The point of outfall of the sewer is to be here. It is carried across from the little dock that there is there now, or landing, from the upland. This is the edge of the upland, the yellow, carried across and discharged into the channel of Mill creek, at this point somewhere in here.

Mr. Rowe.— How far is that about?

Mr. Croes.— That is about 1,300 feet from the upland, and there is to be a wooden trunk across there discharging the sewage out at this point. The point where all the floats were started from was right in the center of the channel at the point where the sewer is said to be made to discharge. The lines of floats put in on different days are represented by different colored lines here on the map. The floats of June thirtieth are blue, those of July seventh, put in on the ebb tide, are in black, and those on June thirtieth, put in on the ebb tide, are in red.

Now, taking the floats on the flood tide, for instance those at the time that the tide began to flow, are shown by the course of the blue floats — that is, it was low tide and the tide was just beginning to raise then — all of these floats came up in this direction. You will see there were eight floats put in there, extending from 9.40 o'clock in the morning until 3 o'clock in the afternoon, and they, all of them, ran up and were stranded, some of them — they all landed here. None of them went up farther than this point, and they were all stranded on the meadows around in this vicinity.

on the adjacent shore closer by, the tide at that time not running out as fast, being past the center of the ebb tide.

Those floats gave a very fair indication of the course that would be followed by any matter that would be deposited in the channel. They were standing twenty-eight inches deep and they gave a very true and close approximation to the course of any matter deposited in the center of the stream at that point:

Dr. Balch.— Mr. Croes, I would like to ask you a question. As an expert engineer, in your opinion, raw sewage discharged from the proposed outfall of the Flatbush avenue sewer, could that reach deep sea water?

Mr. Croes.— It could not.

Dr. Balch.— Would it be distributed over the meadows which are uncovered at low tide, by the incoming tide as it fell from the sewer mouth?

Mr. Croes.— From the experiments which I made and from the observation of the currents there, it certainly would be.

Dr. Balch.— The sewage from the town, of about 12,000 people, would be discharged from this outfall, would it not?

Mr. Croes.— Yes, sir.

Dr. Balch.—And about how much on an average is that sewage per day in gallons? That would be about thirty gallons a person, would it not?

Mr. Croes.— Well, from a population of about 12,000, I should think there would be at the first in the neighborhood of about 60,000 gallons a day, at the first, and increasing as the connections with the sewers increased.

Dr. Balch.— So that when all the connections with the sewers were made you would have more than likely 120 gallons a day?

Mr. Croes.— You would probably have 300,000 gallons per day.

Dr. Balch.— There would be 300,000 gallons per day on an average?

Mr. Croes.— Yes, sir.

Dr. Balch.— Of that 300,000 per day on an average, about how much is solid matter?

Mr. Croes.— Well, I can hardly give that in gallons. I think, though, that it would be probably from about a ton and a half to two tons.

Dr. Balch.— Of solid matter?

Mr. Croes.— Of solid matter. A ton and a half to two tons of solid matter it would be that would be deposited there.

Dr. Balch.— How deep is Mill creek where the discharge takes place?

Mr. Croes.— I think it is about four feet deep at low tide.

Dr. Balch.— And about how wide?

Mr. Croes.— At low water?

Dr. Balch.— Yes, sir.

Mr. Croes.— Well, it is from eighty to 100 feet.

Mr. Baisley.— You are overestimating the depth of that creek according to the plans that were drawn by the United States survey.

Mr. Croes.— In the center of the creek there, at low tide, I should think it was that.

Mr. Hunt.— We measured it on the days that we were there, but of course we didn't know about the extreme low water.

Dr. Balch.— What I want to know is this: There is but very little water comparatively in the bed of this creek at low tide, and they are discharging in here an average of two tons per day of solid matter, which is spread around, more or less, say one-half of it is sediment there, and the other half goes over the meadows and is deposited there. In other words it will fill up the bed of the creek more or less.

Mr. Croes.— In relation to one of those float experiments that I call your attention to here, I would state: On July first a float was put in at 11.45 in the morning in Garretson's creek, about one-quarter of a mile below the mouth of Mill creek, and at 6 o'clock on July seventh, that same float was found within a thousand feet of where it had been put in. It had been floating around for a week in the stream, probably being stranded at times and then washed off; but there it was within a thousand feet of where it had been put in.

Dr. Balch.— All I wish to say from what Mr. Croes has stated here, and reading his report made to the plaintiff's attorney in this case, it is evident that sewage discharged into Mill creek could not get out into the ocean; it is going to be deposited more or less on the flats and create a nuisance. There is no question in the mind of the president of the State Board of Health, nor in my mind, that that would be the fact, and it would create a menace and danger to public health. The question would come up chiefly on the power of the local board of health as to what it could do in the case. I notice here in some of the papers forwarded me that the board of health of Flatlands, through its counsel, Messrs. Morris & Whitehouse, considers it has no power in the matter until a nuisance is created. The letter is as follows:

MORRIS & WHITEHOUSE, 103 MONTAGUE ST.,
BROOKLYN, *August* 20, 1891.

Messrs. EVARTS, CHOATE & BEAMAN:

Gentlemen.— Referring to the petition of some of the citizens of Flatlands, addressed to the board of health of that town, we would state on behalf of the board, that they have carefully read and considered the same, and although they concur in the opinion therein expressed, that the sewer in question, when completed and put into use, will create a nuisance, they are unable to find wherein they have any power to act in the premises until a nuisance exists. They do not understand that they have any power to act when a nuisance is apprehended merely. If when completed and put into use, the sewer proves to be a nuisance, the board will make use of every power it possesses to suppress it, and to that end will invoke the aid of the courts, if necessary.

Yours, etc.

MORRIS & WHITEHOUSE.

The State Board of Health considers that the board of health of Flatlands has power, especially when called upon by the State Board of Health, to prevent the nuisance coming on, rather than to wait until the nuisance does come on and then try to abate it.

Laying the matter before the Attorney-General, his opinion was to that effect, that if the State Board of Health called the local board of health together, under the provisions, as I stated before, of subdivision 1, section 3, Laws of 1885, chapter 270 — if the Board of Health, or its president and secretary, shall be satisfied that action by the board of health of the town of Flatlands is necessary for the public good, the State Board would require the board of health of the town of Flatlands to take such measures as may be necessary to prevent the creation of this nuisance in the furtherance of their duties in protecting their jurisdiction from the menace and danger to public health and guard against the introduction of disease or anything else as it set forth in subdivision 3 of the same section, where they are empowered to guard against the introduction of contagious and infectious disease by the exercise of proper and vigilant medical inspection. If they can guard against the introduction of a disease by keeping people out or keeping goods out, or quarantine things from entering their borders, they certainly can guard against the introduction of disease by preventing a town discharging sewage upon their grounds where that is going to be a nuisance. That this is so is shown in the case of the complaint of the board of health of the city of Syracuse against the city of Syracuse. The board of health of the city of Syracuse wrote to the State Board about it, and they advised them that they had power to go on themselves and act in the matter, and they did so. The complaint of the board of health was against the city itself, William B. Burns, mayor; John Lee, and others, aldermen of the city. The cause of action, or the complaint, sets forth that the common council of the city had contracted and passed an ordinance to lay a certain drain or sewer in a certain place where the board of health decided that if that was done where it was proposed to construct said sewer, it would be a menace and danger to public health.

The common council, upon the order of the board — or rather, the board made their order upon the common council, but they paid no attention to the matter, so the board of health carried the matter to the Supreme Court, and the opinion of the Supreme Court is as follows:

SUPREME COURT.

The Board of Health of the City of Syracuse against the City of Syracuse et al.

AT CHAMBERS, *November*, 1887.

Order to show cause why a preliminary injunction should not be continued as a temporary injunction during the proceeding of the action.

P. B. McLennan, for plaintiff.

C. L. Stone, for defendant.

Vann, J. Motion granted, and the injunction heretofore issued ordered continued during the pendency of the action, with ten dollars costs, to abide event. Held,

1. That the board of health had jurisdiction to make the general order or regulation in question, under chapter 270 of the Laws of 1885.

That was to restrain the common council of the city of Syracuse within its own jurisdiction from taking a sewer, the discharge of which sewer would create a nuisance which, in the opinion of the board of health, would be a menace and danger to the public health; and the court held that under the power of that board, granted to it in chapter 270 of the Laws of 1885, it had the right to make this order, and the common council would have to abide by said order.

2. That a court of equity has power, under said statute and the other acts governing the granting of injunctions, upon the application of the board of health, to restrain any violation, of said order, or regulation, even if such violation is by the deliberate act of the city of Syracuse through its mayor and common council.

Now comes the third, and this is the main point for this board of health to consider:

3. That it is not necessary, in order to authorize a restraining order, that the apprehended nuisance should have become fully developed or that it should be actively engaged in its work of disseminating disease.

So, therefore, the courts hold, and the State Board of Health is advised by its counsel, the second Deputy Attorney-General, that the board of health of Flatlands has complete and entire power to prevent the discharge of this sewage into its jurisdiction or into the town of Flatlands from the village of Flatbush, unless Flatbush takes some precaution to render the discharge absolutely innocuous and not dangerous.

In Rochester, I will state to this Board, somewhat the same ruling was held by the court there, where the city of Rochester discharged by the end of an open sewer into a creek called Thomas creek, which was running out of the city limits and entered into a township and through that township went on to Arundercut bay. The board of health issued an order forbidding the city of Rochester so to discharge, and the court sustained that action. The result has been that in the city of Rochester intercepting sewers are now being laid.

I think there is no doubt as far as the question of law is concerned but what the board of health of Flatlands has the entire power to proceed against the town of Flatbush, or get an injunction from a court to prevent the town of Flatbush from discharging its sewage here until such measures are taken by the officers as will render such discharge no menace or danger to the public health.

The State Board of Health, therefore, under the authority conferred by law, calls upon the board of health of Flatlands to pass a resolution taking definite steps looking toward the prevention of this nuisance, and it is considered by the Board that those definite steps are necessary for the public good.

Mr. Baisley.— Pardon me, who is the gentleman I am speaking to?

Dr. Balch.— I am Dr. Balch, Secretary of the State Board of Health.

Mr. Baisley.— I would like to state that we have taken that step. I do not see that we are represented by counsel, but I see that Evarts, Choate & Beaman's office is represented.

Dr. Balch.— I think your counsel was notified from us the same time we notified you.

Mr. Baisley.— I think the counsel notified the State Board of Health, or Evarts, Choate & Beaman, that when the matter became a nuisance, they would take some steps.

Dr. Balch.— Yes, sir; that is what I just read; but this is to prevent the starting of the nuisance.

Mr. Baisley.— Has the board of health of the town of Flatlands a right to abate the nuisance —

Dr. Balch.— I beg your pardon; you are not abating anything; you are not attempting to abate anything; you do not serve any order on Flatbush to abate any nuisance because there is no nuisance, but what you ought to do is to sue out an injunction to prevent them from going on with a certain matter which is bound to create a nuisance in the town of Flatlands; and you have a right to sue them in the court to restrain them from making the discharge of that raw sewage, because you have before you reports of experiments which show that that raw sewage is going to stay within your town, and is not going to sea; and is bound to create a nuisance by deposits on the flats, and it is bound to create a menace and danger to public health; and, therefore, it becomes your duty to guard against any disease to make Flatbush attend to the matter, or to take such steps yourself, if necessary, to restrain Flatbush from discharging sewage into your town.

You, therefore, have the power to sue out, as I say, an injunction restraining Flatbush from discharging raw sewage into the waters of that bay.

Mr. Baisley.— You will understand, as supervisor of this town I put an injunction upon casting sewage into Flatlands bay; it went through the Supreme Court.

Dr. Balch.— You did do so?

Mr. Baisley.— We did.

Dr. Balch.— I beg your pardon; I did not know that.

Mr. Baisley.— We did; and we have got the decision of the court. Some of our neighbors, also, at the same time, had a case they brought up the day following, and went into the courts, and, as you understand, they got beat, and they carried it to the Court of Appeals. There they received a decision for damages, whatever it may be.

Mr. Rowe.— It is proper to state, in explanation of that, that the action taken at that time, both by the individual inhabitants and by the supervisor representing the town, was simply an action to restrain the construction of the sewer in Flatbush avenue. No question of nuisance, so far as the inhabitants are concerned, was raised. So far as the supervisor was concerned, he was acting as supervisor, and was not acting in any connection with the board of health. The question of possible results from the discharge of the sewage was raised incidentally with the view of showing that the property of the town of Flatlands was, in effect, being taken without compensation by the construction of the sewer. The only question was whether or not an injunction should issue either to the individual inhabitants or to the supervisor or highway commissioners of the town, of which, of course, the supervisor is one, by reason of the construction of this sewer without their previously having taken proper proceedings to condemn the property or to make any compensation.

Dr. Balch.— It was a question as to the right to lay the sewer through the town of Flatlands, but not a question as to whether the discharge would be a nuisance.

Mr. Baisley.— It was a question between the people here and the town of Flatbush.

Dr. Balch.— As to their taking the ground for running their sewer on?

Mr. Baisley.— Not between the town here and the people of the town of Flatbush, but it was between the property owners.

Mr. Rowe.— I am the representative of the property owners.

Dr. Balch.— Then your suit was a suit by the highway commissioners of the town of Flatlands?

Mr. Baisley.— The people of the town of Flatlands.

Member of Board.— If I understand the thing rightly, the State Board of Health makes a demand upon us?

Dr. Balch.— Yes, sir. But before making any formal demand I would like to hear the thing discussed thoroughly. As I understand the supervisor now to say — first of all, the property owners adjacent to the discharge pipe here and along the highway brought suit against the village of Flatbush to restrain them from building the sewer there, or to make them pay damages for taking their land, for their right of way. That you say the Court of Appeals —

Mr. Baisley.— I say myself and the commissioners of highways laid an injunction upon this sewer.

Dr. Balch.— For what purpose?

Mr. Baisley.— To stop it from going through the town of Flatlands.

Dr. Balch.— On what grounds?

Mr. Baisley.— We took the ground that they had no right to go through the town of Flatlands under the land that they had.

Dr. Balch.— You did not take any ground as to the matter of public health in that petition ?

Mr. Baisley.— Not at all.

Dr. Balch.— Or whether it would create a nuisance ?

Mr. Baisley.— No, sir.

Dr. Balch.— And it was to preserve your right to say whether another town could run things through your land without your permission ?

Mr. Baisley.— That was the view we took.

Dr. Balch.— And that you did not get deep in, did you ?

Mr. Baisley.— No, the courts restricted that, and said that they had a right to go through the town, but they had —

Dr. Balch.— From the law giving them the right to go to tide water ?

Mr. Baisley.— From the law giving them the right to go to tide water; but they should be restricted to make no nuisance upon the grounds.

Dr. Balch.— The court stated that they should be restricted, that they should create no nuisance?

Mr. Baisley.— That is it. The complaint was that they were going to back up water with this sewer, and the judge stated that they should not do that.

Dr. Balch.— Here we come, now, I think, to a little different state of things.

Mr. Rowe.— If I may speak a moment. That action was really an action solely on behalf of the highway commissioners of the town.

Dr. Balch.— I understand it, to prevent a fellow going through without permission from the town. That was very proper, and to prevent anybody walking over the town and taking whatever he liked.

Mr. Baisley.— That was it. We did not approve of that at all.

Member of Board.— There were several members of the board of health over there this morning to make an examination of the sewer

Dr. Balch.— How far have they got it done ?

Member of Board.— They have it all done. My opinion is that the sewer will be a failure. I don't think anything will ever go through it, and I will give you my reasons why I think so. We opened a man-hole, I think it was in the neighborhood of 500 feet from the shore, up on the highland, and there I think the sewer was half full of water.

Mr. Rowe.— That was backwash.

Member of Board.— That was backwash. We went up in front of Mr. Hendrickson's house and we opened a man-hole there, and there wasn't a particle of water in there, and never has been, and I think it will never work.

Dr. Balch.— They are not discharging into the sewer now?

Member of Board.— No, sir; the sewer is built like that; it is not level. (Deflection.)

Dr. Balch.— If they have got pressure enough above there some day they will shove it out.

Mr. Rowe.— They will fill up the sewer.

Member of Board.— Instead of the sewage going out of the mouth of the sewer it will come out of the man-holes.

Dr. Balch.— Then it would be worse yet.

Member of Board.— Yes; then it would be worse yet.

Dr. Balch.— I think the question comes down to the point for me to say to the board of health of Flatlands — counsel of the State Board has held that this board has jurisdiction and power to try and prevent the discharge of that sewage into this town on the ground that the discharge of the sewage where it is intended is bound, and can not do otherwise than to produce a nuisance of menace and danger to public health.

Mr. Baisley.— Is this the secretary of the State Board of Health?

Dr. Balch.— Yes, sir; I am the secretary of the State Board of Health, and I am advised by the Deputy Attorney-General, counsel of the Board, that that is the power of the local board of health of Flatlands.

Mr. Baisley.— You were notified in relation to the matter by our counsel; that is, Morris & Whitehouse — I think this is the representative of Evarts, Choate & Beaman [referring to Mr. Rowe] — it was unexpected to me that you called this meeting to-day.

Dr. Balch.— I will state that on September twenty-first this letter was sent to you [reads letter notifying board of health of Flatlands to hold this meeting]. You received that, did you not?

Mr. Baisley.— I got a telegram yesterday wanting to know where we were going to meet.

Dr. Balch.— Didn't you get this letter?

Mr. Baisley.— Yes; I got that.

Dr. Balch.— Of course the telegram would not be anything. That is merely asking the question where you were going to meet. If you got that letter you ought to have received it on the twenty-second of the month.

Mr. Wilson.— If there is any law in the land to stop these people from committing that nuisance, we ought to have it.

Member of Board.— The way I understand it, we are called together here by the order of the State Board of Health. It is our duty to take care of the interests of our people in Flatlands, and the only thing I see we have got to do is to pass a resolution instructing our counsel to fight. That is all I think we have to do in the matter.

Dr. Balch.— I think the State Board of Health requires you to do that.

Member of Board.— I claim if we do not do it we are not doing our duty, and the State Board has power to remove us.

Mr. Baisley.— You will find upon the books now already in this office that we passed such resolutions, to employ counsel whenever it becomes a nuisance.

Dr. Balch.— Yes; but I want you to do more than that.

Mr. Baisley.— I am going to ask you this: Have we got a right to act until it becomes a nuisance?

Dr. Balch.— Yes, sir.

Mr. Baisley.— We have?

Dr. Balch.— Yes, sir.

Mr. Baisley.— I would like to be informed by you that we have that right.

Member of Board.— He has just quoted the law on it.

Dr. Balch.— I have quoted the law and read the opinion of Judge Vann in the matter of Syracuse and quoted the verbal opinion given to me of the Deputy Attorney-General. Judge Vann gave that decision in that case which I have stated, what the courts in Rochester have held about it, and what the counsel to the Board of Health held about it, that the board of health of Flatlands be requested to act by the State Board of Health, and they have power under the law to sue out an injunction or take such measures to prevent a nuisance being made — they have as much power to do that as to abate a nuisance after it is made. Now this is to prevent this nuisance being made. It is all ready to be made now. If they connect Flatbush with that sewer to-day or to-morrow and start discharging anywhere from 100,000 to 300,000 gallons of sewage a day, your nuisance is made, you can not help yourself; then you have got a nuisance; then you have a longer and more expensive fight for the village of Flatlands than you have to-day; but by an injunction now before they go to work and connect, they can take such measures as will prevent that becoming a nuisance, and the board of health can sue out an injunction to make them do so. You do not dictate to them what they should do, you simply stop them from creating a nuisance.

Mr. Baisley.— You understand my position?

Dr. Balch.— Yes.

Mr. Baisley.— We laid an injunction upon that sewer.

Dr. Balch.— It was not on this ground.

Mr. Rowe.— There is the resolution asked by the board of health of Syracuse of that case. [Reads resolution.]

Dr. Balch.— That order was disobeyed by the city of Syracuse, so that the board of health sued out an injunction, and Judge Vann gave the opinion that the Board had the right and power, and did its duty. He made the injunction permanent, and it was restraining them from discharging their sewage in that manner before it had been discharged or had become any nuisance at all. You can cover the same thing here. The same sort of resolution from this board would act in the same manner, and compel them to take some steps, to do something in the matter.

Mr. Baisley.— We took those steps.

Dr. Balch.— You took them in one way, but not through the board of health.

Member of Board.— As I understand it, this is another question; this is as to the Board of Health, not as to the board of town officers or highway commissioners. How are we to take steps as the local board of health?

Mr. Baisley.— That is to stop the nuisance?

Dr. Balch.— To prevent the creation of a nuisance.

Mr. Baisley.— Well, gentlemen, I took the advice of counsel, which you authorized me to do.

Member of Board.— But not in this matter at all. You took it to stop them from coming through the town. You have got to get another injunction to restrain them from making a nuisance.

Mr. Baisley.— I think the secretary has received from Morris & Whitehouse a letter ——

Dr. Balch.— No, sir; we have received a copy of a letter they wrote. There is their letter referring to the petition of the citizens of Flatlands [referring to letter], and their opinion is that you can not act until the nuisance is created; but the opinion of the State Board of Health, the opinion of the Deputy Attorney-General, is opposed to the opinion of Messrs. Morris & Whitehouse, it does not agree with them, and holds that you can act, as the board of health of Syracuse did, and that, therefore, you can sue out an injunction to restrain the discharge of this sewage in such manner and until such time as it will not be a menace and danger to public health.

Member of Board.— As I understand it, this local board of health is merely acting as the mouthpiece of the State Board of Health. They demand that we have this resolution passed and serve a notice or injunction on Flatbush not to allow them to put the sewage into our bay.

Judge Wilson.— This gentleman thinks that the point ought to be brought out that if the nuisance is once allowed to become a nuisance, you can not abate it.

Dr. Balch.— I do not say that at all.

Judge Wilson.— He thinks that point ought to be brought.

Dr. Balch.--Why not prevent it? I will state this, that the State Board of Health is opposed to the discharge of any raw sewage in Jamaica bay from any point. What I mean to say is, that the State Board of Health is opposed to anything of this kind. It prevented Rockaway from doing it, it refused to approve the plans of Rockaway because it was like this: They had a better chance, but they were going to make a sewage pit of a certain hole they were going to discharge into and trust to the Lord and the tide to get it out once and a while, and we could not approve of that because it was going to make a nuisance. The twenty-sixth ward of Brooklyn, if I am not mistaken, discharges into this bay. They are prevented absolutely from discharging any raw sewage into this bay by law, the Board of Health had a law passed that they would have to submit plans to us as to the manner in which they would discharge, but no raw sewage could come out there. Let the twenty-sixth ward of Brooklyn, Flatbush and all the villages discharge into this bay their raw sewage, and before you know it you will have a deposit of sewage in the bay that you will not get rid of in twenty years. So that, therefore, the only way to protect this water and to preserve it in a proper healthy condition, where we have so much flatland flooded over at high tide, is to prevent anywhere a discharge of raw sewage into the waters of Jamaica bay.

Judge Wilson.— Mr. Chairman, I have a resolution to offer, which I would ask the clerk to read.

The resolution was read, as follows:

"Whereas, The town of Flatbush is constructing, and has nearly completed the construction, in the town of Flatlands, of a large trunk sewer to carry the sewage matter of said town of Flatbush to tide-water in Flatlands bay, in said town of Flatlands, said sewage matter to be discharged at a point in Mill creek in said bay; and,

"Whereas, The State Board of Health has duly called upon this board to take definite action in reference to the construction of said Flatbush sewer and the disposition of the sewage matter of the town of Flatbush, in Flatlands bay, in the town of Flatlands, as aforesaid; and,

"Whereas, This board, after careful investigation and the reception of the reports of experts upon said sewer and its outlet, is satisfied that the construction and use of said Flatbush sewer, as proposed, will be dangerous to public health and the health of the inhabitants of the said town of Flatlands; and,

"Whereas, This board is satisfied that the construction and use of said Flatbush sewer in the town of Flatlands, as proposed, will undoubtedly cause a nuisance in the town of Flatlands and along the shores of Flatlands bay in said town, and a menace and danger to life and health and dangerous to the public health in said town of Flatlands; and,

"Whereas, This board finds the facts to be as above stated; therefore, it is

"Resolved, That the construction and use of said Flatbush sewer, in the town of Flatlands, will be dangerous to the public health, and it is hereby ordered that the town of Flatbush, its officers, agents, servants, contractors and employes, and all other persons, be, and they hereby are, forbidden to construct, or to aid in the construction of, said sewer in the town of Flatlands, or to use said sewer when constructed. And it is further ordered that, in case the town of Flatbush fails to comply with the foregoing orders, the counsel of this board are hereby instructed to take proceedings in the Supreme Court at once to enjoin the construction and use of said Flatbush sewer and the discharge of said sewage from said sewer into Flatlands bay, in said town of Flatlands. And it is hereby further ordered that a copy of these resolutions be served upon the town of Flatbush, and that the same be published in one or more of the daily newspapers published in said towns of Flatlands and Flatbush, or in the county of Kings."

Judge Wilson.— I move that the resolution be adopted.

Judge Matthews.— I second the motion.

Carried unanimously.

Judge Wilson.— I move that the clerk serve a copy of the resolution on the authorities in Flatbush.

Judge Matthews.— I second the motion.

Carried unanimously.

On motion the meeting adjourned.

ALBANY, *September* 21, 1891.

To the President Board of Health, Town of Flatlands, Kings Co., N. Y.:

SIR.— Certain matters, relating to the proposed discharge of the sewage of Flatbush into Mill creek, having been laid before this Board, and the petition of a number of the residents of the town of Flatlands to your board relating to the same matter, you are hereby notified and requested, as provided for in subdivision I, of section 3, of chapter 270, of the Laws of 1885, to convene the board of health of the town of Flatlands, Kings county, at Canarsie, on the twenty-fourth day of September, 1891, at 12 o'clock m., to take certain definite proceedings upon matters necessary for the public good and which are within the jurisdiction of the said board.

Very respectfully your obedient servant.

THOS. NEWBOLD.
President.

LEWIS BALCH,
Secretary and Executive Officer.

Pollution of Monhagen Brook by the City of Middletown.

In August, Mr. Clarence G. Seward made complaint to the board of health of the town of Wawayanda, in which he resides, of the condition of Monhagen brook, which is polluted by sewage and manufacturing refuse discharge into it in the city of Middletown. After investigation and discussion the matter was referred to the State Board of Health, for advice. Communication was opened with the board of health of the city of Middletown, and its view of the matter was ascertained, and also the fact that the city relied for its right to discharge sewage into the stream upon condemnation of the stream for sewerage purposes, which was effected some years ago. Upon request of the board of health of Wawayanda, the engineer of the State Board of Health was sent to investigate the case, and made the report which follows, and the local boards of health were referred to the case of Gould vs. The City of Rochester as indicating the responsibility of the city for the creation and maintenance of the nuisance complained of:

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *October* 27, 1891.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

Sir.—I have the following report to make concerning the condition of Monhagen brook. It has been complained of by the board of health of the town of Wawayanda, as being polluted by the sewage of the city of Middletown. I have examined the papers submitted and have also made a personal inspection of the brook itself. The facts in the case are as follows, so far as I have been able to determine:

Monhagen brook is a small stream seven or eight miles in length which flows through the city of Middletown and the towns of Wallkill and Wawayanda to the Wallkill river. At times of low water the amount of water flowing into the stream as it passes through the city is, according to a rough estimate made by myself, less than one cubic foot a second. This is increased at different points, by the reception of sewage from the city at three observed points and by the inflow of water from two or three small brooks. Above the city is located the State Hospital for the Insane. Within the city limits is a dam perhaps twenty-five feet high. For what purposes the water in this dam is used I am not informed. Its supply in dry seasons is very small, as above noted. About a mile below the city limits is Little's dam and mill. The mill is said to be used a few days in a year for grinding feed. The water power of the stream is not sufficient to run the mill except at times of high water and the pond has been so filled up that it furnishes almost no storage. About five miles below the city limits is a paper mill with a dam perhaps fifteen feet in height. In the dry seasons it is reported that all the water of the stream is used in the manufacturing processes of the mill. At other seasons the water is used for power also. All the water used in the manufacturing processes is generally filtered through a sand and charcoal filter.

In 1881 or 1882 the village of Middletown purchased from the property owners along the line of the brook, the right to discharge sewage into it. Short sewers have been built at different times from 1882 to 1888. In 1889 a complete system was designed and a considerable part of it was constructed. Other portions have been constructed in the last two years. The first sewers constructed discharged into Monhagen brook and a branch of Monhagen brook, called Draper brook, within the city limits. This discharge created considerable nuisance and that was probably the principal reason for the design and construction of the complete system, which discharges the greater portion of the sewage into Monhagen brook, at the point near the city limits. Some sewage is still discharged into the brook through the old sewer, still used as a storm-water sewer below the tannery and hat factories. The amount of this sewage is at least equal to the flow of the stream in dry seasons. Draper brook, evidently, is also a recipient of considerable sewage. The hat factories discharge their refuse directly into the stream and the sewage and house drainage from dwellings along the course of the stream are discharged directly into it. At low water, therefore, the stream is little better than a sewer within the city limits, and when this volume is doubled by the addition of the discharge from the main sewer at the crossing of the New York, Susquehanna and Western railroad it becomes practically equivalent to a sewer. The odor from this stream is very pronounced, especially below the outlet of the main sewer, even in cold weather, and must be exceedingly obnoxious in hot weather. I found deposits of sewage matter in the bed of the running stream, at every point that I examined. This matter was very offensive in character and when exposed to the sun at times of low water, must give rise to almost unbearable odors. The deposits in the stream were often as much as a foot in depth, even as far down as the mouth of the brook. Little's pond is said to have been originally seven or eight feet deep. It is now almost entirely filled by the deposits of filth. These deposits, when uncovered at low water, are very offensive, and the odor from the water itself as it falls over the dam is nauseating. The characteristic odor of sewage is observable in the water even at the outlet, after most of the solid matters have been deposited in the mill ponds or along the banks. There is not the least doubt that the stream in its present condition is an intolerable nuisance, which should be abated at the earliest possible moment.

The condition of the stream in the future, if left unattended to, will rapidly become worse, for the amount of pollution entering the stream is rapidly increasing. The sewerage system of the city of Middletown is practically but two years old, and the proportion of houses connected with the system is still quite small. I understand that new connections are being made at the rate of 150 per annum or more. It is probable that not more than one-third of the population is now connected with the sewers. Additional sewers are put in at frequent intervals and the city is steadily increasing in population. The increase in manufacturing will also increase the discharge of manufacturing refuse. The State Hospital for the Insane, above the city, has recently abandoned its former method of sewage disposal, and has constructed this year a system of sewers which is to be connected with the city system and will then discharge through the main outlet. The connection is not yet made, and it is probable that until the city builds the connecting link the hospital sewage will be discharged directly into the stream above the dam, which is within the city limits. This is a certain and large addition to the stream, which will be made almost immediately. This makes early attention to the improvement of the stream absolutely necessary.

It is stated in the communication of the board of health of Middletown that the right to use the stream for the discharge of sewage has been purchased from the property owners adjoining, but this purchase can not justify the production of a nuisance which will seriously affect the property owners mentioned and certainly can not justify the production of a nuisance great enough to affect persons living at a distance from the stream, through whose lands the stream does not flow. The stream is at present complained of by persons so situated, who receive no compensation from the city for the use of the stream. There is no question of the responsibility of the city of Middletown for the nuisance, nor is there any question that the city should abate it.

So far as Monhagen brook is concerned the trouble could be remedied by constructing an outlet sewer to the Wallkill river. I believe the river is not large enough to take care of the amount of sewage discharged from the main sewer without the production of a nuisance. Villages along the course of the Wallkill below Middletown are discussing the propriety of using the water for domestic purposes. The construction of the outlet sewer would cost as much as the construction of proper disposal works near the city. It seems, therefore, that the best course for the city of Middletown to pursue is to provide some adequate means for the purification of the sewage from the city, before discharging it into Monhagen brook.

Respectfully submitted.

CHAS. C. BROWN.

Inspection of Cherry Valley.

Upon request of the board of health of the village of Cherry Valley the engineer of the State Board was sent to inspect the village and make recommendations as to the proper course for the local board to follow in regard to certain nuisances complained of. His report is as follows:

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *October* 15, 1891.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

SIR.— I have the following report to make of the condition of the village of Cherry Valley, which I visited last Friday, in accordance with your instructions:

The village is situated on a summit, between the valleys of the Mohawk and the Susquehanna, near the headwaters of Cherry creek, and is surrounded by hills rising, perhaps, a thousand feet above the level of the village. The slopes for surface drainage are very good, and there should be no difficulty on account of lack of drainage. Two streams of small size flow through the village, neither of which is subject to excessive flood, as both rise but a few rods above the village.

The trouble about which complaint is made is the occurrence of a number of cases of typhoid fever and related forms of disease. So far as I can learn, the cases are all of a light form, and there has been but one death from the disease. This death occurred outside the village limits, but the patient was removed from the village after the disease was contracted. The first case this last spring occurred at the house marked 1, just outside the village limits. There have been three other cases on the same stream below this house, numbered 2, 5 and 6. Cases 3 and 4 occurred the previous year, I believe. Other cases have occurred at the houses numbered from 7 to 22. The case at 22 was of a man who slept in the store at this point, and was removed, after the attack, outside the village, and there died. Cases 8, 9 and 21 were of persons in business, or for much of the time in the block of stores at 22. Cases 8 to 22 have all used the water from a public well, of small depth, near the house marked 10. It is probable that all the other cases have used this same water at times.

The streams are used for drainage, and are much polluted by sewage in the neighborhood of the thickly settled portion. There are several barnyards and pig-pens in the same neighborhood. I have appended a list of the most obnoxious of these. The village is built on the solid rock, and the surface soil is very shallow over the whole village. The rock is seamy, and it is probable that wells in the rock, when subject to pollution, are very much polluted. The question of the pollution of a well is difficult to decide by an inspection, as the location and direction of the seams in the rock are uncertain. I regard with suspicion the well mentioned above, and should recommend its careful examination if its use is continued. Deep wells may be subject to pollution through the seams of the rock as well as shallow wells, or they may be perfectly safe. It is possible for the village to procure an adequate supply of good water, at comparatively low cost, from the streams in the hills above.

The drainage into the streams of closets and barnyards should be prevented. It would be very expensive for the village to construct a system of sewers, as most of the excavation would be in solid rock. The village is losing rather than gaining in population, and this course is not advisable for it under present circumstances. I would suggest either tight vaults, to be cleaned at fixed intervals, or small boxes or pails for frequent and easy removal, for closets, and would require the removal of all such structures from the streams. Pig-pens should be banished from the village limits, and manure piles should be so confined and protected that they will not drain into the streams or into neighboring premises. They should be frequently removed.

I append a list of specific recommendations, and believe that with the cleaning up involved in the recommendations there made, and future attention to prevent a return to the present conditions, there will be less complaint of fevers. It is advisable, however, to pay attention to wells which are, for any reason, of suspicious character.

I find the village on the whole in excellent condition, which gives all the more reason for cleaning up the few places which are in bad condition.

Respectfully submitted.

CHAS. C. BROWN.

Report of Conewango Swamp.

To the State Board of Health:

Gentlemen.— Your petitioners ask your respectful consideration of their request hereinafter stated, for the following reasons:

All of your petitioners reside in the Conewango valley. That portion of the Conewango valley referred to in this petition comprises about 64,000 acres. About 40,000 acres are covered with water several times each year, and remain covered for long periods of time. The banks of the Conewango creek are usually from one to three feet higher than the country inland on account of the larger amount of sediment being deposited where the stream first leaves its bed. In the town of Randolph, near Waterboro, a dam has been formed in the Conewango by a small but very rapid stream, known as "Davis brook," which empties into the Conewango at right angles, and in rainy seasons is, at times, a wild, rushing torrent. This stream has, from year to year, filled up the bed of the Conewango, causing its waters to set back, and in part is the cause of the flooding of all this large and beautiful valley. Vegetation is very abundant in this valley and along the lowlands; the swamp being kept in a flooded condition for long periods of time propagates disease among the people living within this valley. Two-thirds of the town of Dayton, large areas in the towns of New Albion, Leon, Cherry Creek, Ellington, Conewango, Randolph and Coldspring feel its baneful influence.

Immense damage is done every year to the pasturage and the meadows adjoining the swamp by summer floods. The evaporating of water demands heat. The effect, therefore, of this great extent of evaporating surface must be to cool the air as well as to chill and sour the land. The mass of stagnant water standing on and mingling with the decaying organic matter promotes disease and causes much sickness among the people. There are nine or more towns affected by this swamp, and as many as 5,000 people who live in close proximity to the swamp lands are more or less affected thereby.

Your petitioners respectfully ask your honorable Board to send some competent person, or a committee of two or more persons, to examine into the facts set forth in this petition, to the end that proper steps may be taken by the State Board of Health or some other proper authority, upon the recommendations of your Board, to abate the nuisance, by draining off the waters of the Conewango creek and from the flooded lands of this vast area of country in the Conewango valley.

(Signed by) Orestus S. Cowen and 537 others.

CHAUTAUQUA COUNTY,
STATE OF NEW YORK. } *ss.:*

First.— Dr. J. M. Brooks, being sworn, says: I am a physician and surgeon, and have practiced for ten years past; am a resident of Conewango Valley, N. Y.

Second.— This spring I have had two cases of fever in one family (typho-malarial). Last May, 1890, I had a case of relapsing fever, the wife of E. A. Whiting, of Conewango valley, N. Y., that was certainly due to malarial influence, and every spring I have more or less sickness to treat that could be directly traced to malaria.

Third.— And in my opinion there is no doubt that the overflowing of the Conewango creek and the consequent decomposition of vegetable matter is the main source of the diseases that are directly traceable to malaria, and consequently very injurious to the health of those residing in said Conewango valley or swamp.

DR. J. M. BROOKS.

Sworn and subscribed this thirtieth
day of May, 1891. }

CHARLES CHURCHILL,
Justice of Peace.

June 1, 1891.

To whom it may concern:

For twenty-one years I have been acquainted with the results of the flooding of the Conewango valley. This huge basin retains over a large area all summer a mass of wet, decaying matter, which, I believe, spreads disease and disseminates an unwholesome atmosphere even beyond the valley. Many creameries and cheese factories are located around this valley, and the refuse from them runs down into the lowlands and there, for want of drainage, remains and, as I have often observed, becomes exceedingly offensive, and necessarily a breeder of disease. On general chemical and physiological principles such a condition of stagnation must be prejudicial to health, and while it is always difficult to trace infectious and miasmic diseases to their sources, I am thoroughly satisfied that the Conewango swamp is one of them.

J. T. EDWARDS.

STATE OF NEW YORK, } *ss.:*
CATTARAUGUS COUNTY. }

Dr. James Brooks, being duly sworn, says: I am a physician and surgeon and have resided near the Conewango swamp for forty-two years.

According to my knowledge and belief many diseases that I have treated, notably fevers and rheumatism, have had their origin from the malaria arising from the overflow of said swamp.

JAMES BROOKS.

Sworn and subscribed to before me }
this 29th day of May, 1891. }

FRANK E. CASE,
Justice of the Peace.

STATE OF NEW YORK, } *ss.:*
CATTARAUGUS COUNTY. }

Archibald H. Babcock, being duly sworn, says that he resides in the village and town of Randolph, Cattaraugus county, New York; that he is a practicing physician and has been such in said village since the spring of 1879. That during that time he has been called upon to treat a number of patients who were affected with malarial diseases, and who were at the time in the valley of the Conewango creek in the said town of Randolph and adjoining towns, and now calls to mind the cases of two children of A. A. Hildrum, and that of Adelbert Gorsline, who were treated by deponent in September and October, 1888 for typho-malaria.

That in opinion of deponent the said cases of typho-malaria were directly attributable to miasm of the great swamp extending along the said Conewango creek through the western part of said Cattaraugus county. That the three cases above specified all occurred in the town of Randolph.

That in opinion of deponent the decaying vegetable matter of said swamp caused by the backing up of the water of said creek, and the consequent flooding of many thousand acres of land is the direct cause of malarial and typhoid fevers and other kindred diseases.

A. H. BABCOCK, M. D.

Sworn before me this 1st }
day of June, 1891. }

DEWITT C. RIELLY,
Notary Public.

STATE OF NEW YORK, } *ss.:*
COUNTY OF CHAUTAUQUA. }

Dr. T. E. Soules, being duly sworn, says: That he has been in active practice in the village of Cherry Creek and vicinity for upwards of four years; that he is a regular graduate of the allopathic school; that he has noted during his whole practice in this location the continued modification of the diseases in and about his field, which brings many cases to be classed under the head "malarial;" that in the cases of Walter Knights' family, P. Bolt's wife and self, Henry Butler and wife, Geo. Scoffield, Albert Lawson, Oscar Wildey, and numerous others, the trouble was due to miasmatic contagion, in some of these cases the typhoid condition, rendered differential diagnosis difficult, but, though stricken from the medical vocabulary, I still believe in a typho-malarial fever, and can see no good philosophical reason for giving or attempting to give another name to what I believe a well-defined form of malarial infection, using the word "typho" as an adjective. I have cause to ride over and about this great fall and spring ocean, and after the water has evaporated and the sun shone hotly upon the delicate vegetation for a few days, no man would deny that exhalation of malaria must be a result. These flats are not dried up until July in many places, and this offensive, poisonous affluvia is given off for some time longer. The thing speaks with no uncertain language for itself.

T. E. SOULES, M. D.

Subscribed and sworn to before me
this 24th day of May, 1891.

JOHN W SMITH,
Justice of the Peace.

Report on Conewango Swamp Drainage.

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *December* 1, 1891.

LEWIS BALCH, M. D., *Secretary of State Board of Health, Albany, N. Y.:*

Sir.— I have the following report to make of my investigation of the condition of the Conewango swamp and the possibility and advisability of draining it:

On June twelfth and thirteenth I accompanied you on a preliminary trip of inspection, during which we obtained much information from residents of the vicinity of the swamp, including land owners and physicians, and by personal inspection of a considerable portion of the swamp satisfied ourselves of the substantial accuracy of the statements made. In August and September I spent several weeks in a more detailed inspection of the whole region, and collected much additional and more accurate and detailed information. It is unfortunate that there is no detailed survey of this region, and the desirability of the completion of the State survey is again illustrated. The county atlas maps seem to be fair, so far as distances are concerned, and they are used as the basis of the accompanying maps. Their margin of error is, however, not small. The line of the Buffalo and Southwestern Division of the New York, Lake Erie and Western railroad runs close to the edge of the swamp, and, by the courtesy of the official of that road in charge of right of way maps, I am able to use the levels obtained in locating that road as the basis of vertical measurements. It must be understood, however, that the levels furnished are those of the location surveys and not of the completed road, and so, while they may be used as approximate results, the elevations of given points can not be used as exact, on account of the change in form of the ground during construction. I am also much indebted to Mr. Robert P. Ewing, of the village of Pine Valley, who was the locating engineer of the railroad, and is well informed on the topography of the region. His assistance and the information he has given me are invaluable.

It is believed that the results obtained are sufficiently accurate to be used as a basis for the approximate estimates of the amount of work necessary under the plans proposed for partially or wholly draining the swamp, but detailed surveys of the proposed routes will be necessary to determine what is the best and most economical, and to obtain information sufficient to proceed to the letting of contracts.

Conewango swamp lies in the upper portion of the course of Conewango creek, in the towns of Villanova, Cherry Creek and Ellington, in Chautauqua county, and the towns of Dayton, Leon, Conewango and Randolph, in Cattaraugus county. The swamp lies at the bottom of the valley and has a width varying from half a mile to three miles, averaging about one mile. The width of the portion of the valley more or less affected by overflow averages about three miles. The length of the swamp is about sixteen miles. There is a gradual slope in the surface of the ground throughout, and in the surface of the water. The slope of the water surface is distributed over much more than sixteen miles, as the windings of the stream greatly increase its length. This makes the current very sluggish. Another reason for the sluggish current and for the length of time it takes the flood waters to run off, is the formation of a dam across the stream at the lower end of the swamp by a small stream which comes in from the east and fills up the channel with a heavy deposit of gravel. Below this obstruction the declivity of the stream is greater.

The area in each town which is at present probably called swamp land, and the area which is at times overflowed, and on which the flood waters stand for a greater or less length of time to the great detriment of crops growing thereon, are given in the following table:

TABLE I.

Chautauqua County.

Town	Area overflow. Square miles.	Area overflow. Acres.	Area in swamp proper. Square miles.	Area in swamp proper. Acres.
Villanova	5.89	3,770	0.07	44
Cherry Creek	8.40	5,376	4.36	2,790
Ellington	1.72	1,101	0.70	448
Total in Chautauqua county	16.01	10,247	5.13	3,282

Cattaraugus County.

Town	Area overflow. Square miles.	Area overflow. Acres.	Area in swamp proper. Square miles.	Area in swamp proper. Acres.
Dayton	11.57	7,405	2.99	1,914
Leon	8.13	5,203	3.05	1,952
Conewango	11.60	7,424	7.63	4,883
Randolph	1.69	1,082	......	......
Total in Cattaraugus county	32.99	21,114	13.67	8,749
Grand total	49.00	31,361	18.80	12,031

The watershed tributary to Conewango creek above the dam formed at the outlet to the swamp extends over part or all of the towns of Perrysburg, Dayton, Persia, Leon, New Albion, Conewango, Napoli, Randolph and Cold Spring, in Cattaraugus county; and the towns of Arkwright, Villanova, Charlotte, Cherry Creek, Gerry and Ellington, in Chautauqua county. The area of watershed in each town is given in the following table:

TABLE II.

Chautauqua County.

Town.	Area of watershed. Square miles.	Area of watershed. Acres.
Arkwright	5.22	3,341
Villanova	32.10	20,544
Cherry Creek	34.70	22,207

Town.	Area of watershed. Square miles.	Area of watershed. Acres.
Charlotte	3.70	2,368
Gerry	2.77	1,773
Ellington	27.18	17,395
Poland	0.86	550
Total	106.53	68,178
Cattaraugus County.		
Perrysburgh	2.41	1,542
Persia	4.29	2,746
Dayton	29.53	18,899
Leon	35.45	22,688
New Albion	15.45	9,888
Napoli	8.63	5,523
Conewango	32.15	20,576
Randolph	21.91	14,022
Cold Spring	7.71	4,935
Total	157.53	100,819
Total area of watershed	264.06	168,997

The surface slopes of the watershed, aside from the immediate vicinity of the Conewango swamp, are not greatly different from the slopes on the Croton watershed. The tributary streams run in deeply cut valleys in the hills and have a rapid longitudinal slope. The geology of the region is entirely different, and it is possible that the immediate absorption of water by the ground is greater in the case of the Conewango than in the case of the Croton, but the heavier and longer continued the rain, the less the difference between the two watersheds on this account, and the difference is almost entirely eliminated when a mass of snow is to be moved by the action of spring rains. What difference there is is offset in great part by the fact that there are several reservoirs on the Croton watershed which delay the flow of water except towards the end of long periods of heavy rain or in the spring when there are large amounts of snow to move. The Croton watershed is about fifty per cent larger than the Conewango, which would increase the loss from evaporation somewhat. It is probable, therefore, that at times of maximum flow the ratio of the amount of water falling on the watershed to the amount flowing in the stream is about the same for the two watersheds. The following table shows this ratio in detail for the Croton watershed for the time during which observations have been taken.

TABLE III.

Showing flow in Croton river reduced to inches in depth on the entire watershed, rainfall in inches, and ratio of flow in stream to rainfall for each month from 1870 to 1890, inclusive:

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
1870:			
January	3.94	4.51	87.4
February	4.22	6.40	64.5
March	3.47	4.27	81.3
April	4.05	5.45	74.3
May	2.03	3.45	58.9
June	0.82	2.06	39.7
July	0.51	3.43	14.8
August	0.50	5.10	9.8
September	0.33	2.85	12.3
October	0.42	4.73	8.8
November	0.61	2.51	24.4
December	0.63	1.49	42.6
	21.38	44.63	47.9
1871:			
January	0.58	3.80	15.4
February	2.18	3.81	57.1
March	3.47	4.27	81.3
April	1.99	3.01	66.1
May	2.03	3.45	5.89
June	1.42	5.73	24.7
July	0.72	5.07	14.2
August	0.84	5.24	16.1

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
September	0.62	1.44	43.1
October	1.90	6.18	30.7
November	3.36	4.35	77.3
December	2.08	2.59	80.2
	21.19	48.94	43.3
1872:			
January	2.05	1.44	142.7
February	1.23	1.22	101.2
March	1.72	2.59	66.5
April	3.07	3.04	100.9
May	1.27	3.69	34.3
June	1.21	4.00	30.1
July	0.61	4.34	11.1
August	1.62	5.99	27.1
September	1.23	3.69	33.4
October	1.11	2.15	51.7
November	2.64	4.91	53.7
December	1.43	3.68	38.9
	19.19	40.74	43.3
1873.			
January	4.24	5.66	74.8
February	1.70	3.09	55.0
March	3.97	3.08	129.0
April	7.02	3.77	186.4
May	2.16	2.91	74.2
June	0.54	0.71	78.7
July	0.49	2.21	22.0
August	0.70	5.73	12.3
September	0.51	3.73	13.7
October	1.43	5.13	27.8
November	1.79	3.72	48.1
December	3.33	4.13	80.7
	27.88	43.87	63.5

1874.

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
January	8.10	6.96	116.5
February	2.76	2.78	99.3
March	2.99	1.57	190.2
April	3.58	6.31	56.7
May	3.15	1.99	158.1
June	0.91	3.57	25.5
July	1.41	5.98	23.7
August	0.88	2.75	31.9
September	0.58	3.56	16.2
October	0.80	2.40	33.4
November	0.73	2.72	26.7
December	0.96	1.78	54.2
	26.85	42.37	63.4

1875.

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
January	0.64	2.74	23.4
February	4.04	3.47	116.3
March	3.19	4.99	64.0
April	5.51	3.04	181.1
May	1.84	1.08	170.2
June	0.58	3.02	19.1
July	0.57	3.10	18.5
August	5.73	10.33	55.4
September	0.89	2.11	42.2
October	0.84	3.61	23.3
November	2.02	4.61	43.9
December	1.82	1.56	116.3
	27.67	43.66	63.3

1876.

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
January	1.57	1.42	110.5
February	3.60	4.91	73.4
March	7.06	6.33	111.5
April	6.30	4.43	142.3
May	2.01	3.99	50.3

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
June	0.70	2.52	27.7
July	0.54	3.42	15.9
August	0.50	1.20	41.3
September	0.37	5.21	7.1
October	0.37	1.50	25.0
November	0.70	3.40	20.6
December	1.17	2.35	49.8
	24.89	40.68	61.2
1877.			
January	0.83	2.68	31.9
February	1.53	0.80	191.2
March	6.88	7.66	89.8
April	2.98	2.35	126.9
May	0.88	0.85	103.3
June	0.62	4.95	12.4
July	0.51	4.65	10.9
August	0.49	2.54	19.1
September	0.33	1.49	22.4
October	1.12	8.38	13.4
November	4.12	8.16	50.5
December	1.94	1.52	127.7
	22.23	46.03	48.3
1878.			
January	2.81	4.49	62.6
February	3.87	3.65	105.9
March	3.84	3.10	123.9
April	1.67	2.85	58.5
May	1.55	4.97	31.2
June	1.50	4.65	32.2
July	0.73	4.28	17.1
August	0.67	2.66	25.3
September	2.10	6.61	31.8

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
1874.			
January	8.10	6.96	116.5
February	2.76	2.78	99.3
March	2.99	1.57	190.2
April	3.58	6.31	56.7
May	3.15	1.99	158.1
June	0.91	3.57	25.5
July	1.41	5.98	23.7
August	0.88	2.75	31.9
September	0.58	3.56	16.2
October	0.80	2.40	33.4
November	0.73	2.72	26.7
December	0.96	1.78	54.2
	26.85	42.37	63.4
1875.			
January	0.64	2.74	23.4
February	4.04	3.47	116.3
March	3.19	4.99	64.0
April	5.51	3.04	181.1
May	1.84	1.08	170.2
June	0.58	3.02	19.1
July	0.57	3.10	18.5
August	5.73	10.33	55.4
September	0.89	2.11	42.2
October	0.84	3.61	23.3
November	2.02	4.61	43.9
December	1.82	1.56	116.3
	27.67	43.66	63.3
1876.			
January	1.57	1.42	110.5
February	3.60	4.91	73.4
March	7.06	6.33	111.5
April	6.30	4.43	142.3
May	2.01	3.99	50.3

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
June	0.70	2.52	27.7
July	0.54	3.42	15.9
August	0.50	1.20	41.3
September	0.37	5.21	7.1
October	0.37	1.50	25.0
November	0.70	3.40	20.6
December	1.17	2.35	49.8
	24.89	40.68	61.2
1877.			
January	0.83	2.68	31.9
February	1.53	0.80	191.2
March	6.88	7.66	89.8
April	2.98	2.35	126.9
May	0.88	0.85	103.3
June	0.62	4.95	12.4
July	0.51	4.65	10.9
August	0.49	2.54	19.1
September	0.33	1.49	22.4
October	1.12	8.38	13.4
November	4.12	8.16	50.5
December	1.94	1.52	127.7
	22.23	46.03	48.3
1878.			
January	2.81	4.49	62.6
February	3.87	3.65	105.9
March	3.84	3.10	123.9
April	1.67	2.85	58.5
May	1.55	4.97	31.2
June	1.50	4.65	32.2
July	0.73	4.28	17.1
August	0.67	2.66	25.3
September	2.10	6.61	31.8

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
October	0.92	3.78	24.2
November	2.06	4.36	47.3
December	7.14	8.74	81.6
	28.86	54.14	53.3
1879:			
January	1.43	2.52	56.9
February	2.73	2.85	95.9
March	4.25	4.96	85.6
April	5.05	5.10	99.1
May	1.75	2.45	71.3
June	0.23	5.29	17.5
July	0.72	5.95	12.1
August	1.46	5.83	25.1
September	1.08	3.43	31.4
October	0.66	0.95	69.5
November	0.81	2.49	32.4
December	2.00	4.26	46.9
	22.87	46.08	49.6
1880:			
January	2.71	4.00	67.8
February	2.95	2.92	100.9
March	2.97	4.51	65.9
April	2.06	3.99	51.5
May	0.97	1.17	82.8
June	0.52	1.28	40.4
July	0.53	5.65	9.4
August	0.51	3.60	14.1
September	0.49	2.69	18.4
October	0.51	3.25	15.5
November	0.57	2.97	19.1
December	0.53	2.49	21.3
	15.32	38.52	39.8

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
1881:			
January	0.75	4.19	17.9
February	4.27	5.28	80.8
March	6.00	6.14	97.8
April	1.85	1.67	111.0
May	1.37	3.74	36.6
June	1.64	5.72	28.7
July	0.57	2.45	23.2
August	0.51	1.71	30.1
September	0.50	0.75	66.6
October	0.52	3.65	14.1
November	0.47	4.50	10.4
December	1.71	6.53	26.1
	20.16	46.33	43.5
1882:			
January	2.37	4.41	53.7
February	4.17	5.96	70.0
March	4.68	4.58	102.1
April	1.41	1.36	103.5
May	2.17	6.30	34.5
June	1.68	3.04	55.3
July	0.68	3.63	18.8
August	0.52	3.92	13.2
September	3.21	14.33	22.4
October	2.24	3.33	67.4
November	0.95	1.66	57.1
December	1.27	2.68	47.4
	25.35	55.20	45.9
1883:			
January	1.05	2.80	37.4
February	3.75	5.21	72.1
March	2.98	1.67	178.7
April	2.69	3.94	68.2

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
May	1.36	2.86	47.7
June	0.62	5.64	11.1
July	0.52	4.26	12.1
August	0.52	2.09	24.7
September	0.50	2.45	20.5
October	0.65	6.90	9.3
November	0.68	1.79	37.8
December	0.63	3.45	18.2
	15.95	43.15	36.9
1884:			
January	2.11	5.07	41.6
February	4.88	6.31	77.3
March	4.94	4.82	102.7
April	2.96	2.96	100.0
May	1.88	4.33	43.5
June	0.69	2.04	33.7
July	0.80	6.54	12.3
August	1.16	4.50	25.9
September	0.73	1.69	43.0
October	0.65	3.74	14.9
November	0.97	4.37	22.1
December	3.73	7.34	50.8
	25.41	53.71	47.3
1885:			
January	4.06	5.59	72.7
February	2.40	4.66	51.5
March	2.02	1.29	156.8
April	2.59	2.09	123.8
May	1.55	2.44	63.7
June	0.58	1.19	49.0
July	0.51	5.27	9.7
August	0.57	7.35	7.7
September	0.42	1.09	38.2

Month.	Flow in stream in inches.	Rainfall in inches.	Per cent of rainfall.
October	0.55	5.19	10.5
November	2.17	5.99	32.1
December	2.06	3.84	53.6
	19.48	45.99	42.4
1886:			
January	3.37	5.24	64.3
February	4.83	5.20	92.8
March	2.46	3.86	63.9
April	4.45	3.61	123.4
May	2.12	4.54	46.7
June	0.77	3.09	25.0
July	0.60	4.40	13.6
August	0.58	3.21	17.9
September	0.50	2.30	21.7
October	0.52	2.28	22.6
November	0.87	5.57	15.5
December	1.17	4.29	27.3
	22.24	47.59	46.7
1887:			
January	2.70	5.68	47.6
February	4.95	6.01	82.4
March	3.28	3.60	91.2
April	3.25	3.47	93.6
May	1.27	0.32	397.7
June	1.17	7.65	15.3
July	2.61	13.32	19.6
August	3.01	7.06	42.6
September	0.91	2.00	45.4
October	1.02	3.12	32.6
November	0.94	2.69	34.8
December	3.10	6.71	46.2
	28.21	61.63	45.8

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rainfalls, or is altogether lacking. This is made more evident by the statement that the entire storage capacity of the upper reservoirs, including all but Croton lake itself is equal to less than one and one-half inches of rainfall on the whole watershed. Some of the irregularities in the curves are doubtless due to the arbitrary division of time into months. A continuous curve could be obtained more nearly by plotting daily results or even weekly results, but the time covered by the observations is long enough to give a very fair idea of the relation of the flow of the stream to the rainfall. In table VII, following, are given the maximum percentages which will probably not be exceeded for the maximum monthly rainfall, these data being given for each month in the year. The selection of these figures is a matter of judgment, and I have, therefore, given all the data at hand, that an estimate of the correctness of the selection made can be formed.

Table IV shows the precipitation each month since January, 1871, at Buffalo, N. Y. Table V shows the same for Erie, Pa. The maximum rainfall in twenty-four hours is also given for each month at each place. These places are located northeast and southwest of the Conewango swamp, and are the nearest stations of the United States Weather Bureau. I am indebted to the superintendent of the bureau for these tables. The stations are on Lake Erie at an elevation above sea level of about 690 feet. The Conewango swamp is nearly 1,300 feet above sea level and is located on the plateau above the lake and from ten to thirty miles distant from it. It is, therefore, desirable to find some station on or near the plateau. Table VI shows the monthly precipitation at Humphrey as observed by voluntary observers from 1883. This table is made up partly from the reports of the chief signal officer of the United States army, and partly from the reports of the New York State Weather Service. For the latter I am indebted to Professor E. A. Fuertes, the director. A study of these figures will show that the results during the months from October to March are less than those at Erie and from April to September are greater. Humphrey is in Cattaraugus county in the next town to the east of the watershed of the Conewango, and should be a fair exponent of the condition of the Conewango watershed. Its elevation is 1,950 feet, which would be a little above the average elevation of the Conewango watershed. Several stations of the voluntary weather service are located near the watershed and present observations for short periods of time. All give the same indications as Humphrey. Among these are Kiantone, Chautauqua county; Friendship, Allegany county, elevation about 1,600 feet; Alfred Center, Allegany county, elevation 1,824 feet; Angelica, Allegany county, elevation about 1,340 feet. It is considered safe, therefore, to use the data for Erie as the basis of computations, making such modifications of the maximum monthly rainfall as the table for Humphrey indicates are desirable. Table VII is therefore made up, the first column showing the maximum percentage of rainfall reaching the stream, as shown by the observations of the Croton river; the second column giving the percentage to be used in computing the flow in the stream from the maximum rainfall in each month; the third column giving the maximum rainfall each month in the year at Humphrey, and the last column giving the flow in the stream in inches of depth on the entire watershed, computed by multiplying the greater rainfall in columns three and four by the percentage in column two. The corresponding flow in the stream in cubic feet a second can be obtained by multiplying the numbers in the last column by the area of the watershed in table II and reducing to cubic feet a second.

TABLE IV.

Showing monthly precipitation and maximum precipitation in twenty-four hours in each month, at Buffalo, N. Y.:

1871.

Month.	Monthly rainfall.	Maximum rainfall in 24 hours
January	1.16	0.39
February	1.61	0.71
March	2.08	0.78
April	1.12	0.28
May	1.76	0.72
June	3.94	2.10

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
July	5.17	1.22
August	4.99	3.23
September	1.07	0.69
October	1.64	0.80
November	3.53	2.53
December	2.55	0.54
	30.62	......
1872.		
January	1.94	0.70
February	2.21	1.76
March	1.30	0.49
April	1.43	0.68
May	2.23	0.44
June	3.52	0.98
July	1.66	0.88
August	1.94	0.93
September	4.34	1.37
October	4.36	0.94
November	4.29	1.32
December	2.03	0.36
	31.25	......
1873.		
January	1.68	0.44
February	1.42	0.41
March	5.54	1.38
April	3.58	0.87
May	2.53	0.92
June	1.87	0.75
July	7.19	2.73
August	3.44	1.08
September	2.59	0.84

Month.	Monthly rainfall.	Maximum rainfall in 24 hours
October	6.34	2.45
November	3.89	0.61
December	4.56	1.18
	44.63	......
1874.		
January	5.61	1.74
February	2.42	0.68
March	1.08	0.62
April	2.44	0.66
May	3.04	1.29
June	1.50	0.46
July	4.64	1.11
August	0.46	0.20
September	3.39	1.23
October	2.12	0.68
November	2.62	0.81
December	1.12	0.42
	30.44	......
1875.		
January	1.46	0.25
February	1.26	0.45
March	1.87	0.72
April	1.52	0.30
May	3.37	0.85
June	2.88	0.77
July	3.42	0.93
August	3.45	1.42
September	4.09	2.36
October	3.04	0.71
November	2.09	0.70
December	2.99	0.93
	31.44	......

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
1876.		
January	3.49	0.67
February	5.16	1.59
March	4.09	0.75
April	3.28	0.81
May	1.45	0.34
June	1.24	0.39
July	4.77	1.53
August	0.05	0.04
September	4.35	1.68
October	3.56	0.84
November	4.47	1.24
December	3.35	0.67
	39.26	......
1877.		
January	2.19	0.86
February	0.46	0.25
March	4.91	1.46
April	2.24	1.40
May	0.53	0.49
June	4.86	1.32
July	1.85	0.54
August	2.95	0.94
September	2.55	1.29
October	6.17	2.03
November	4.27	0.90
December	1.50	1.00
	34.48	......
1878		
January	4.64	1.14
February	1.70	0.33
March	5.11	1.39
April	4.71	1.31

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
May	3.36	1.11
June	3.46	1.29
July	6.80	2.61
August	3.17	1.42
September	7.44	2.12
October	6.86	1.81
November	4.44	1.34
December	8.55	2.53
	60.24	......
1879.		
January	3.42	0.85
February	2.82	0.69
March	2.13	0.57
April	1.36	0.57
May	1.11	0.98
June	2.48	0.85
July	2.68	1.32
August	3.62	2.74
September	2.52	0.74
October	0.74	0.25
November	4.28	1.08
December	3.31	0.77
	30.47	......
1880:		
January	1.68	0.58
February	3.51	1.35
March	2.11	0.87
April	2.53	0.46
May	3.05	1.14
June	2.97	0.59
July	3.31	0.64
August	6.07	1.97
September	2.96	1.36

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
1876.		
January	3.49	0.67
February	5.16	1.59
March	4.09	0.75
April	3.28	0.81
May	1.45	0.34
June	1.24	0.39
July	4.77	1.53
August	0.05	0.04
September	4.35	1.68
October	3.56	0.84
November	4.47	1.24
December	3.35	0.67
	39.26	......
1877.		
January	2.19	0.86
February	0.46	0.25
March	4.91	1.46
April	2.24	1.40
May	0.53	0.49
June	4.86	1.32
July	1.85	0.54
August	2.95	0.94
September	2.55	1.29
October	6.17	2.03
November	4.27	0.90
December	1.50	1.00
	34.48	......
1878		
January	4.64	1.14
February	1.70	0.33
March	5.11	1.39
April	4.71	1.31

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
May	3.36	1.11
June	3.46	1.29
July	6.80	2.61
August	3.17	1.42
September	7.44	2.12
October	6.86	1.81
November	4.44	1.34
December	8.55	2.53
	60.24	......
1879.		
January	3.42	0.85
February	2.82	0.69
March	2.13	0.57
April	1.36	0.57
May	1.11	0.98
June	2.48	0.85
July	2.68	1.32
August	3.62	2.74
September	2.52	0.74
October	0.74	0.25
November	4.28	1.08
December	3.31	0.77
	30.47	......
1880:		
January	1.68	0.58
February	3.51	1.35
March	2.11	0.87
April	2.53	0.46
May	3.05	1.14
June	2.97	0.59
July	3.31	0.64
August	6.07	1.97
September	2.96	1.36

Month.	Monthly rainfall.	Maximum rainfall in 24 hours
May	3.80	1.30
June	6.39	3.28
July	3.63	1.43
August	10.63	2.66
September	4.88	1.57
October	6.19	1.59
November	2.66	0.73
December	4.51	1.16
	52.36	......
1886.		
January	4.22	1.26
February	4.00	1.13
March	4.23	1.33
April	3.25	1.22
May	4.69	1.44
June	3.30	1.21
July	1.34	0.68
August	2.77	1.63
September	5.98	1.40
October	1.67	0.47
November	6.05	1.38
December	3.26	1.22
	44.85	......
1887.		
January	1.92	0.40
February	5.51	1.39
March	2.12	0.55
April	1.47	0.56
May	3.08	0.99
June	2.05	0.39
July	1.98	1.10
August	3.56	1.30
September	2.30	0.56

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
October	2.76	0.53
November	2.53	0.49
December	2.27	0.50
	31.55	......
1888.		
January	2.45	0.45
February	1.46	0.60
March	2.07	0.50
April	3.46	1.64
May	1.66	0.77
June	3.64	1.56
July	2.01	1.52
August	1.81	0.56
September	3.52	1.51
October	5.43	1.29
November	3.90	1.26
December	2.46	0.55
	33.87	......
1889.		
January	4.72	1.70
February	2.29	0.46
March	1.34	0.90
April	3.42	1.28
May	2.77	1.32
June	5.27	1.72
July	3.58	1.18
August	1.07	0.35
September	4.09	1.27
October	2.80	0.85
November	5.06	0.84
December	3.66	0.62
	40.07	......

Month	Monthly rainfall.	Maximum rainfall in 24 hours
1890.		
January	3.90	0.73
February	3.66	1.04
March	2.46	0.97
April	3.48	1.22
May	6.13	1.52
June	5.23	2.03
July	1.27	0.28
August	3.52	1.04
September	4.71	1.81
October	6.12	1.00
November	3.91	2.25
December	2.16	0.49
	46.55	......
1891.		
January	2.25	0.60
February	4.14	0.84
March	2.14	0.30
April	1.28	0.47
May	1.36	0.51
June	1.64	0.92
July	4.27	1.41
August	3.15	1.33
September	1.79	0.52
October	1.35	0.49
November	3.13	0.66
December	4.24	1.17
	30.74	......
1892.		
January	2.88	1.74
February	2.76	1.76
March	2.69	1.46
April	2.43	1.71

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
May	3.11	1.96
June	3.41	3.28
July	3.40	2.73
August	3.16	3.23
September	3.33	2.36
October	3.79	3.10
November	3.64	2.53
December	3.37	2.53
	37.95	......

TABLE V.

Showing monthly precipitation and maximum precipitation in twenty-four hours in each month, at Erie, Penn.:

1874.

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
January	5.54	1.42
February	4.01	1.21
March	1.09	0.36
April	1.52	0.39
May	1.94	0.39
June	3.76	1.25
July	7.03	2.26
August	1.99	0.85
September	4.43	0.81
October	2.29	0.82
November	2.51	0.83
December	1.72	0.85
	37.83	......
1875.		
January	1.41	0.27
February	0.94	0.43
March	2.68	0.94

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
April	1.69	0.24
May	5.14	1.10
June	5.45	2.30
July	2.41	0.70
August	5.18	1.66
September	3.40	1.05
October	5.04	0.66
November	3.95	1.09
December	3.91	0.99
	41.20	......
1876.		
January	4.53	1.22
February	5.34	1.83
March	3.76	0.86
April	3.63	0.75
May	2.84	0.83
June	4.70	1.40
July	1.31	0.47
August	0.98	0.76
September	8.45	2.40
October	5.45	1.29
November	2.92	0.63
December	0.75	0.28
	44.65	......
1877.		
January	2.15	0.54
February	0.33	0.13
March	5.07	1.20
April	2.04	0.66
May	1.30	0.53
June	5.92	0.92
July	3.48	1.44
August	3.31	1.21
September	2.27	0.93

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
October	4.55	1.52
November	6.27	1.30
December	2.27	0.53
	38.96	......
1878.		
January	6.20	1.50
February	3.41	1.10
March	5.41	1.37
April	3.18	0.70
May	6.31	1.25
June	3.35	1.42
July	2.73	1.17
August	2.00	1.14
September	7.08	2.70
October	6.83	2.06
November	4.28	1.17
December	4.45	1.34
	55.23	......
1879.		
January	1.80	0.63
February	2.41	0.62
March	2.99	0.64
April	2.29	0.68
May	1.04	0.42
June	2.33	0.54
July	2.04	1.13
August	4.17	3.11
September	2.91	0.77
October	1.18	0.26
November	8.35	2.07
December	4.74	0.89
	36.25	......

1880:

Month.	Monthly rainfall	Maximum rainfall in 24 hours.
January	2.86	0.62
February	3.73	2.05
March	2.32	0.82
April	3.86	0.77
May	3.02	0.75
June	3.78	0.98
July	3.06	0.89
August	4.04	0.49
September	5.01	1.62
October	3.56	0.75
November	4.45	0.98
December	1.25	0.17
	40.94	......

1881.

Month.	Monthly rainfall	Maximum rainfall in 24 hours.
January	2.10	0.65
February	1.93	0.48
March	2.39	0.30
April	1.26	0.28
May	2.16	0.40
June	6.37	1.84
July	1.39	0.60
August	1.02	0.70
September	1.35	0.39
October	5.75	1.56
November	5.46	1.35
December	6.44	1.26
	37.62	......

1882.

Month.	Monthly rainfall	Maximum rainfall in 24 hours.
January	4.00	1.26
February	3.12	1.12
March	4.27	0.98
April	3.31	0.81

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
May	5.63	0.92
June	3.43	0.67
July	3.80	1.44
August	4.14	1.23
September	4.85	2.35
October	3.17	1.63
November	3.42	0.74
December	3.23	0.61
	46.37	......
1883.		
January	2.06	0.53
February	5.94	2.65
March	1.25	0.52
April	2.94	0.85
May	6.29	1.32
June	3.73	0.80
July	3.94	0.72
August	2.44	1.45
September	4.41	1.12
October	4.00	1.06
November	3.47	1.06
December	3.74	0.88
	44.81	......
1884.		
January	4.59	1.53
February	5.88	1.06
March	3.84	1.17
April	1.99	0.65
May	3.42	0.71
June	2.40	1.50
July	5.29	1.70
August	2.16	1.33
September	3.92	1.15

Month	Monthly rainfall.	Maximum rainfall in 24 hours.
October	3.23	0.95
November	4.91	0.90
December	3.84	0.80
	45.47	......
1885.		
January	3.60	0.66
February	2.10	0.67
March	1.83	0.35
April	3.25	0.56
May	4.90	1.55
June	6.84	3.61
July	3.03	0.78
August	7.97	2.71
September	3.42	0.81
October	8.17	1.93
November	5.83	0.85
December	3.19	1.00
	52.13	......
1886.		
January	4.80	1.02
February	3.43	1.67
March	3.03	0.83
April	3.05	1.81
May	1.48	0.66
June	2.77	1.20
July	2.16	1.37
August	1.53	0.40
September	3.26	0.99
October	1.73	0.39
November	6.21	1.57
December	4.04	1.10
	37.49	......

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
1887.		
January	3.66	0.62
February	8.50	2.02
March	3.06	1.09
April	2.55	0.88
May	2.96	1.07
June	5.21	3.64
July	0.80	0.46
August	3.54	1.49
September	3.17	1.46
October	4.43	0.99
November	4.13	0.98
December	3.13	0.46
	45.14	......
1888.		
January	2.79	0.62
February	1.66	0.74
March	2.04	0.37
April	2.70	0.90
May	2.26	1.00
June	2.38	1.09
July	3.17	2.45
August	3.76	1.90
September	2.86	0.94
October	3.17	0.78
November	3.38	0.74
December	1.77	0.59
	31.94	......
1889.		
January	2.71	1.62
February	1.57	0.23
March	1.73	0.78
April	3.64	1.12

Month.	Monthly rainfall.	Maximum rainfall in 24 hours.
May	2.51	0.68
June	6.02	3.13
July	1.68	0.64
August	2.26	0.89
September	4.85	0.97
October	3.37	0.84
November	3.29	1.04
December	4.03	0.54
	37.66	......
1890.		
January	4.50	0.84
February	3.60	1.29
March	3.43	1.00
April	3.16	1.20
May	6.40	1.25
June	4.23	1.92
July	0.76	0.29
August	4.64	2.57
September	5.16	1.96
October	6.13	0.80
November	3.32	1.14
December	1.72	0.56
	47.05	......
1891.		
January	2.32	0.56
February	4.95	1.57
March	2.44	0.82
April	1.34	0.43
May	1.49	0.77
June	1.22	0.70
July	2.66	0.78
August	1.96	0.78
September	2.88	0.89

Month	Monthly rainfall.	Maximum rainfall in 24 hours.
October	1.78	0.60
November	3.99	0.64
December	3.27	0.90
	30.24	......

	Average.	Maximum in 24 hours.	Maximum in one month.
January	3.46	1.62	6.20
February	3.49	3.35	8.50
March	2.92	1.37	5.41
April	2.58	1.81	3.86
May	3.39	1.55	6.40
June	4.10	3.64	6.84
July	2.76	2.45	7.03
August	3.17	3.11	7.97
September	4.09	3.40	8.45
October	4.10	2.06	8.17
November	4.45	2.07	8.35
December	3.19	1.34	6.44
	41.71	......	55.23

TABLE VI.

Showing monthly precipitation in inches at Humphrey, Cattaraugus county, from records of voluntary observers.

	1883.	1884.	1885	1886.	1887.	1888.	1889.	1890.	1891.
January	......	2.14	2.51	2.35	4.06	3.51	3.16	5.02	1.82
February	......	3.62	1.57	1.70	7.30	1.74	1.03	3.91	4.55
March	......	3.50	1.39	2.57	2.29	1.80	2.34	3.34	2.36
April	......	2.14	2.86	2.28	3.10	4.14	4.26	4.95	2.17
May	......	5.11	4.99	3.35	1.50	4.63	6.27	9.11	1.45
June	......	14.15	5.96	2.76	2.14	3.57	8.35	3.76	5.95
July	6.69	5.27	2.38	4.96	2.53	2.42	3.16	3.43	7.22
August	2.55	4.80	10.11	2.57	3.37	4.09	1.63	5.11	6.63
September	2.85	4.82	4.44	3.91	3.09	3.55	3.12	9.00	2.04
October	3.33	3.93	4.17	1.55	3.96	4.27	2.40	5.94	2.42
November	3.02	2.93	2.71	6.23	2.29	2.60	4.51	3.81	4.09
December	......	3.69	3.31	2.67	2.60	2.81	4.98	1.91	......
Totals	......	56.10	46.40	36.90	38.23	39.13	45.21	59.29	......

	Average.	Maximum.
January	3.07	5.02
February	3.18	7.30
March	2.45	3.50
April	2.99	4.95
May	4.55	9.11
June	5.83	14.15
July	4.23	7.22
August	4.54	10.11
September	4.09	9.00
October	3.55	5.94
November	3.58	6.23
December	3.14	4.98
Year	45.89	59.29

TABLE VII.

Computation of maximum flow in Conewango creek each month, in inches, of depth on the entire water-shed:

MONTH.	Maximum per cent.	Per cent to be used.	Maximum monthly rainfall, Erie.	Maximum monthly rainfall, Humphrey.	Computed maximum flow of stream.
January	142.7	115	6.20	5.02	7.13
February	191.2	115	8.50	7.30	9.78
March	190.2	115	5.41	3.50	6.22
April	186.4	150	3.86	4.95	7.43
May	397.7	75	6.40	9.11	6.83
June	78.7	55	6.84	14.15	8.00
July	23.7	55	7.03	7.22	3.97
August	134.5	55	7.97	10.11	5.56
September	66.6	55	8.45	9.00	4.95
October	69.5	70	8.17	5.94	5.72
November	77.3	80	8.35	6.25	6.68
December	167.4	90	6.44	4.98	5.80

It will be seen that the computed flow in the stream is less than the equivalent of eight inches depth of water on the watershed for every month but February. For that month it rises almost to ten inches. It is believed that eight inches is a sufficiently large figure to assume for the maximum flow in the stream. This belief is founded on the following considerations: The flow is computed on the maximum rainfall at Erie or Humphrey. If computed for February on that at Humphrey it would be but little over eight. The snowfall during the winter months at Humphrey is much larger than on the Croton watershed, as shown by the records of the last two years, given in the reports of the State weather service. It is probable, therefore, that the percentage of flow in the stream in February, near Humphrey, is less than that on the Croton watershed by an appreciable amount in ordinary seasons. This would reduce the estimate of flow in stream in February. The estimate of flow in March is 6.22 inches. Should the maximum flow in February take place, the probability of the maximum March flow following it is very small indeed, but even if it did, the sum of the flow for the two months is sixteen inches, and a channel large enough to carry an eight-inch flow in one month would carry a sixteen-inch flow in two months or less. Should such a flood occur in February, it would therefore be fully discharged before April, and would not materially interfere with the cultivation of the fields. As before stated, the probability of such a combination of circumstances is very slight, and it is not likely that such an overflow will occur once in twenty years. There is, so far as the records for twenty years can show, no likelihood that such a flood will occur in any other month in the year. The June flow comes nearest to it, but this is the eight-inch flow, and the next month either side of it is much within this limit of capacity.

The selection of eight inches depth of water on the watershed as the capacity of the outlet channel is again a matter of judgment and all the facts are given so that the propriety of the figure chosen may be judged.

The maximum estimated volume to be discharged by the outlet channel amounts, upon the above supposition, to about 1,900 cubic feet a second. To prevent any overflow whatever, the channel must be computed not only for this maximum monthly flow, but also for the maximum flow likely to occur in a few hours or a day or two. It is much more difficult to compute the volume of flow in the stream from the maximum rainfall in twenty-four hours, than it is to compute it for the maximum monthly flow as the data at hand are not sufficiently detailed. I have computed the area of channel therefore for the maximum monthly rainfall and have shown the condition of the channel under various suppositions as to the amount of the rainfall reaching the stream within twenty-four hours.

If a velocity of four feet a second is assumed, the area of cross section necessary to discharge 1,900 cubic feet, will be about 500 square feet. If a velocity of three feet a second is assumed, the area necessary will be about 640 square feet. An examination of plate III, which shows the proposed channel in plan, will show that it will be possible to obtain a depth of eight feet in the channel at high water. It will be necessary, therefore, under the supposition of a velocity of four feet a second, to give a top width to the channel of about eighty feet, assuming the side slopes to be two horizontal to one vertical. Under the second supposition of a velocity of three feet a second, it will be necessary to give a top width of about 100 feet. The length of the channel is about 1,500 feet, from the present obstruction to a point between the bridges of the N. Y., P. and O. R. R. and the B. and S. W. Division of the N. Y., L. E and W. R. R. The entire excavation for the channel 100 feet wide would be 28,000 cubic yards. For the channel 100 feet wide the total excavation will be about 35,500 cubic yards. A part of the excavation has already been made, the depth being about four and one-half feet, the average width about forty-five feet and the length about 1,000 feet. This excavation amounts to 7,500 cubic yards. There remains to remove from the eighty-foot channel 20,500, or from the 100-foot channel 28,000 cubic yards. The slope of the bed of the channel will be practicably inappreciable. The effect of the stage of the flood, whether rising or falling, rapidly or slowly, upon the velocity of the water will be greater than that of the slope of the bottom of the channel. The surface velocity will undoubtedly be greater than five feet a second, at times when the flood is rising rapidly, and will be less than three feet when the water is low. Bank protection will be needed at the entrance into the new channel and along the lower side of the creek below very slight, although the capacity of the channel is but 7.35 per cent of the maximum rainfall assumed, 3.64 inches in twenty-four hours. In the winter and early spring the case is somewhat different. The maximum rainfall in twenty-four hours is, with one exception, less than half that in summer, but such a fall may occur with melting snows or on a frozen surface, so that the amount of water to be carried off in a day may be an appreciable percentage of the amount falling. The chances are still small that the whole amount falling in a day will be discharged in twenty-four hours through the outlet, but anything greater than about fifteen per cent of the rainfall will be beyond the capacity of the channel. With the exception of February the maximum monthly rainfall is less than eight inches, and it will, therefore, be possible to discharge the flood, with that exception, within a month. It would be possible to discharge the maximum February and March rainfalls, if they occurred together, within the two months, as the average of the two months is eight inches. The duration of floods will, therefore, seldom interfere with spring planting, and only in remote contingencies will a destruction of crops after they are in the ground occur.

The above discussion assumes that the water gets to the outlet without delay from obstructions in the channels above the outlet.

A study of the swamp demonstrates the fact that the water can not reach the outlet without undue obstruction to its flow by the numerous bends in the course of the creek and some log jams and submerged dams, the remains of former jams. To secure the full benefit of the work done on the outlet, it will be necessary to do a large amount of work on the upper course of the creek. The enlargement and deepening of the outlet will reduce the length of time that floods will last on the area of the swamp, and will reclaim a narrow strip along its borders, but the level of high water will be but little reduced on account of the accumulation of water from the fact that the waters of the lower ground in the valley will not get out of the swamp before those from the hills arrive. The improvement of the channels above the outlet is, therefore, necessary. The channel of the creek is now very tortuous, it being estimated by some of the residents who have examined the matter that the stream flows from twenty to twenty-five miles to cover distance in a straight line of five miles. This tortuous channel is obstructed in some places. The removal of the obstructions would assist in some degree, but a straightening of the channel to concentrate the fall in a straight channel with greater average declivity is necessary to increase the discharge sufficiently to reclaim the entire swamp area. A channel from the stream at a point about two miles below the north line of the town of Conewango in a nearly straight line to a point on the creek nearly a mile north of the south line of the town, would be about three miles long and would cut off nearly five times the length of channel in the present creek-bed. An approximate location of such a channel is indicated on the map of the swamp, plate II, by a dotted line. This straightened channel would have a slope of three to four feet a mile, the present average slope being less than one foot per mile. The average slope of the surface of the swamp is a little over two feet per mile, throughout its length. When the outlet is deepened and the channel is straightened, an average declivity for the whole length of the swamp of about two and a quarter feet per mile can be obtained. To secure the best results throughout the swamp, this average declivity should be uniformly distributed through the length of channel. This would necessitate some deepening and straightening of the channel from the upper end of the channel described above to the upper end of the swamp. A very material improvement, however, can be made by digging the three-mile channel to the average slope mentioned. This would relieve at once a large area, and would favorably affect the whole swamp. The needed outlet would thus be provided and private enterprise would take care of the upper and outer portions of the present swamp.

The new channel proposed would receive water from 200 miles of the watershed and would be called upon to discharge, according to the data given above, 1,440 cubic feet a second. Its dimensions should, therefore, be, top width seventy feet, depth of water ten feet. If it is found on detailed survey that it is impossible to get ten feet depth of channel the breadth must be increased to make up for the loss of depth. Such a channel will carry any flood which the outlet channel will carry. The limit of its capacity will not be passed once in twenty years. A reduction in the size of the channel will render the area subject to more frequent overflows in proportion to the amount of reduction. Above the upper end of this channel the straightening and deepening of the present channel will usually be sufficient. The more thoroughly the work is done, the more nearly the average declivity of slope is approached, the better the effect will be. Any amount of money up to $30,000 or so can be spent and the benefit will be very nearly proportional to the amount expended. The size of channel necessary will gradually decrease from the dimensions given (seventy feet top width and ten feet depth) to one of about one-third the size. More definite figures of this part of the work can not be given with the information at hand, nor are they necessary as a large part of this section of the work can be left to the individuals directly interested.

When the outlet channel is constructed it will be necessary to make some provision for Davis' brook, which ha s caused the present condition of affairs by making the obstruction to the flow of the Conewango creek. Plate III shows the surroundings of the swamp outlet and the improvements proposed. It also shows a new course for the flow of Davis brook which will discharge that stream into the creek some distance below the present place of discharge and in such a place that it will take many years to fill up the approach to the creek with gravel and cause a new obstruction to the flow of the water. The levels given on the map show the conditions of the surface of the ground and the feasibility of the proposed change in the course of the brook. The area of the watershed of the brook is about 3,000 acres. The slopes of ground are not excessive, the ground surface being rolling. The soil is quite gravelly and it is probable that the absorption of water during rainfalls is large. An assumption that one-half inch of water from the entire watershed would be found in the stream at any one time is probably excessive. Such an assumption and the further selection of the present average declivity of the channel of the brook for the declivity of the new channel would require a

ction of about forty feet top width and five feet depth. annel and declivity would give a velocity of about twelve second, which would be very large for the class of material o be encountered in excavating the channel. It is not advis- wever to reduce the velocity of the water much below that stream above, for the gravel brought down by the stream in that case be deposited at the entrance to the new channel would thus be filled up. It is, therefore, better to preserve velocity, and take measures to protect the parts of the requiring it from washing out, by some effective bank pro- . The expense of excavating the channel for Davis brook very light, as the slope of the ground along the proposed is such that a very economical location of the channel can be The bank protection will probably cost as much as the tion.

ay be said in summing up that it is desirable and entirely e to make the improvement of the channel of Conewango lesired, and to protect the new channel by changing the of Davis brook. The draining of the swamp to any desired is only a question of deepening the outlet and straighten- d reducing to the average gradient the slope of the chan- creasing its cross section in the lower portions, this ement, to secure the fullest effect, to be carried the length of the swamp. A very material benefit can be ed without carrying the work more than three or four up from the outlet, leaving the further prosecution of the to individual effort. The expense of the improvement ot be excessive, and will be more than repaid by the ed valuation of the lands benefited. The expense will justified by the increased healthfulness of the region, thus ed from the malevolent influence of the decaying vegeta- d the noxious vapors of the swamp.

Respectfully submitted.

CHAS C. BROWN,
Civil Engineer.

Reports of Dr. Curtis.

REPORT ON DIPHTHERIA AT MADISON.

ALBANY, *June* 25, 1891.

Dr. LEWIS BALCH, *Secretary State Board of Health:*

Sir.—The existence of a severe epidemic, regarding the nature of which local physicians differed, was reported to the State Board of Health on the twenty-second of June as prevailing at Madison, in the county of Madison, and at your request I went there the next day to make an investigation.

A little over a year ago I went to Madison on account of the successive occurrence there of several cases of diphtheria.

During the summer following there was a subsidence of the disease and the place was comparatively healthy until the outbreak of epidemic influenza (la grippe) in the latter part of the winter. Of this there were many cases. It is reported by the physicians practicing there that many of the persons affected by it had sore throat, and that it was very common for a false membrane to appear upon the throat. Cases of this sort were very common in April. Not all of them appear to have been associated with or attendent upon influenza. Generally they were mild and lasted for a few days only. That they were infectious would be inferred from the occurrence of numerous cases in the same or neighboring families. They were not generally regarded as diphtheria by the physicians, partly because in some instances children exposed did not take sick, chiefly because of the uniform mildness of the malady. In one of these groups of cases, however, in April, there occurred one which terminated fatally, an adult, the mother of several children. These children were scattered and so also was the furniture of the house. Two of these children were taken sick in June, and one died a few days before my arrival after ten days' illness, she also having had sore throat. One of these I saw and found up and apparently well, but with a throat still reddened and excoriated, as is commonly seen after diphtheria; he had been ill but a short time. About the same time children in two or three other families were taken and within a couple of days there were three deaths among them. I believe that all of the sick children had attended a gathering in one of the churches. Concerning the diagnosis of these cases there was difference of opinion among the physicians. On account of this and because of the constant prevalence of cases of the sort I have referred to, and the existence of several cases of sickness at this time the advice of the State Board was called for.

I will not attempt to express an opinion regarding the nature of the disease in those cases related to me as having existed so extensively since April. As described they were certainly of a much milder sort than diphtheria usually is. Regarding four cases then actually sick which I saw, however, in the village, without going into detail as to the symptoms, I have no hesitation in saying they were cases of diphtheria.

I advised the local board of health that they require a report and quarantine of every suspicious case of sore throat, and that the seclusion of all sick and the disinfection afterward of the premises be very strictly enforced, according to the directions given in our diphtheria leaflet. There is little doubt that for one or two years the disease has been occurring in different parts of this town, and it can be gotten rid of only by more careful attention that has been given to this, not only of well-marked but also of doubtful cases.

There have been several localities of late where the local physicians have disagreed as to the diagnosis of diphtheria. In all such cases where doubt exists the benefit of it should be given to the public and the doubtful case treated as if it were an undoubted case of diphtheria. As we have heretofore found, a failure in this has been the cause of spread of the disease, very likely in a fulminant way, just as seems to have been the case here, and the occurrence of several deaths. A mild case of diphtheria is more dangerous than a severe one because it may go undetected into a public gathering, by which means, or by the exposure of a number of children to an infected piece of clothing, or utensil or toy in a school or other assembly the disease is simultaneously contracted by numbers at once.

The steady diminution in the death rate from diphtheria in this State since it has been regarded as a contagious disease and treated accordingly, is undoubtedly due to our more recent enlightenment regarding it and the care used in pursuance of our present knowledge. Diphtheria is prevalent in this town of Madison, and it is not because of the existence of any specially bad sanitary conditions, which have been looked for by the people there, and into several of which suspected places I made search without finding any which had a material bearing on this epidemic, but because there has not been enough strictness in seclusion of the sick from the well and the destruction of the generated germs of the disease.

Respectfully,
F. C. CURTIS.

STATE BOARD OF HEALTH OF NEW YORK,
ALBANY, *December* 9, 1891.

To Dr. LEWIS BALCH, *Secretary of the State Board of Health, Albany, N. Y.:*

Sir.— Regarding the case of suspected smallpox at Geneva, I would report: The subject, Barber by name, about 35 years of age, an undertaker, went November seventeenth to bury a child dying of variola in the adjoining town of Seneca, where the disease had developed in one family, having been brought to it by an emigrant from a German steamer. Sunday, November twenty-ninth, he was taken with a little malaise, had chilly feelings and some muscular pain and thought he had taken cold; this continued for two days. He had acne on his face and back, but on Wednesday he had more of eruption than usual, and on Thursday consulted Dr. Delaney for it, whose suspicions were aroused by the peculiarities of one or two of the lesions and referred him to Dr. Covert, the health officer, and it was decided best to place him in quarantine. I saw him on Monday, December seventh. He had mingled with a moderate amount of acne papules, two or three lesions, differing from those of acne in the various stages in which it presents. One at the outer angle of the eye, and one or two on the lip, and a few others on the body and lower limbs, less than a dozen in all, were papillae with hard edges covered with crusts dark and depressed in the center and presenting the appearance of the lesions seen in aborted variola. There were no constitutional symptoms. He had been vaccinated in childhood. While an exceedingly mild expression of the disease, I would report the case as one of varioloid and recommend the usual precautions taken in cases of smallpox. On account of this case and the proximity of the disease in the adjoining town, there should be general vaccination of all susceptible persons in this village, a precaution which should be taken in all the surrounding towns, although, with the exception of this case, and that of one attending physician, the disease has thus far been restricted to a single family in the town of Seneca.

Respectfully,
F. C. CURTIS.

REPORT ON TYPHOID FEVER IN THE SYRACUSE STATE INSTITUTE FOR FEEBLE-MINDED CHILDREN.

LEWIS BALCH, M. D., *Secretary of the State Board of Health:*

SIR.— About the middle of July a case of typhoid fever developed in the Syracuse State Institution for Feeble-minded Children. About the same time another of the inmates was taken with inflammatory rheumatism, and his sickness ran on into a continued fever, which may or may not have been typhoid, ending fatally. About the end of the first week in August other cases developed, and for several days there were almost daily new cases for a period of two weeks, ten cases in all occurring from the commencement up to August twenty-fifth. Of these two were fatal.

The symptoms presented were sufficiently typical to render the diagnosis certain.

A report of these cases was made by the superintendent, Dr. J. C. Carson, to Dr. Florence O. Donohue, of Syracuse, one of the members of the State Board of Health, who requested that an examination be made by this Board, and the same day in his company I went to the institution for that purpose.

This State institution has been in existence between thirty and forty years. It consists of several well-built brick structures, occupying an elevated and spacious site out from the more thickly built-up part of the city, affording accommodation for 700 feeble-minded and idiotic children; during the summer the number is diminished to 400. Some of these edifices date from the early existence of the institution, others have been built for but a short time, but all have modern appliances for heating, ventilation and drainage.

An inspection showed the drains and water pipes, so far as could be seen, to be after approved modern plans and apparently in perfect condition, although to make certain of this a peppermint test of them should be made. The cellars and basements were found dry and clean. The dormitories are capable of satisfactory ventilation, although some of them are too crowded if all the beds are occupied. It may be safely said that the sanitary condition is good.

The milk supply of the institution is chiefly from a farm connected with it. So far as could be learned by inquiry this farm and the people who have to do with the work upon it, including the handling of the milk, are free from any suspicion of the existence of typhoid fever. Two cans of milk daily have been received from a milk association, which furnishes milk in considerable amount to the city. Concerning this a further inquiry than we were then able to make ought to be made as to there being any possible chance for infection of this milk. There was no knowledge of the prevalence of the disease in the city among their other customers, but it is possible that these two cases may have come from a separate source from the rest distributed by this association. However, this possible source of infection was cut off some time before our visit by the stoppage of this milk supply.

Of the three most common sources for the prevalence of typhoid fever, sewer air, infected milk and infected drinking water, the latter only remains for investigation. The water of this institution is distinct from that of the general city supply being on too elevated a site to have it distributed through the upper floors of the buildings; it is shared alike by a smaller institution, the Shelter for Women, having about fifty inmates, in which five cases of probable typhoid fever have more recently developed. It comes from a reservoir on Onondaga Hill, a considerable elevation four miles distant. This we found to consist of an accumulation of a considerable quantity of stored water held in a circumscribed and abrupt depression by a dam at the lower end of a deep ravine less than 100 yards in width and 300 or 400 yards in length. In all directions but one the land slopes very abruptly away from it; along one side it extends back nearly level and there enters it at this side a narrow branch ravine densely grown up with brush and containing no water. There is no source of surface supply to the reservoir except what may flow down this ravine and this occurs only for a very short time after heavy rain in the summer and from the melting of the large quantity of snow which fills it in the winter. No constant stream of any sort enters the reservoir. The ravine extends back about half a mile and on either side of it is farm land, mostly meadow. There are two dwellings located in proximity to this ravine. Information which we considered satisfactory derived from a neighbor, who seemed to be well-informed, was to the effect that there had been no sickness in these families during the summer; it would be well if a more careful inquiry was made regarding this than we could then make on account of the lateness of the hour, for it is of great importance to discover any possible source of contamination of this reservoir.

The fact that in two institutions having no other relation to each other than a common water supply used by them exclusively there should simultaneously appear an outbreak of typhoid fever, makes it necessary that every possible source of contamination of this water should be looked for. A chemical and biological test is to be made to determine, so far as it may, its purity. This will be of secondary importance since the poison of typhoid fever does not originate in filth or decomposing substances, and it will be necessary to establish the fact that typhoid germs from a pre-existing case of the disease have actually found their way into the water, to prove conclusively that the outbreak is traceable to this source. But the analysis may show the probability of this by the character of any possible pollution found, and besides decomposing matters furnish favorable conditions for the germination and spread of these germs.

I have to report then regarding the three commonest sources of infection that neither was determined by our inspection, so far as it went, to be at fault. Further investigation should be made — regarding the plumbing, whether it is able to stand a test with peppermint; regarding the milk supply, whether from any of its sources there was a possible chance that some one handling it had to do with a case of typhoid fever; regarding the water supply, as to its purity and possible contamination with the special germs of typhoid fever, as already suggested. This is being done. So far as we carried the investigation it did not appear that the outbreak could be attributed to or maintained by either of these. As there were no new cases for a little time prior to our visit the outbreak may have come to an end, having been set up by the importation of the disease at first from some remote source and maintained perhaps by the local infection of the later series of cases from the earlier. Our inspection is to be further continued in the directions indicated and special care is to be taken that all possibility of maintaining a recurrence of the disease upon the premises through the medium of existing cases be removed by thorough destruction of all typhoid fever poison given off in the excreta of the sick, which can not ever be attended to with too great carefulness.

Respectfully,

F. C. CURTIS.

REPORT ON DIPHTHERIA AT WHITEHALL.

ALBANY, *September* 30, 1891.

DR. LEWIS BALCH, *Secretary of the State Board of Health.*

SIR.—Diphtheria has been prevalent at Whitehall since January, 1890. Prior to that time there had been little or none of it since 1874. The first case was that of a child brought, it is said, from a distant locality where diphtheria existed and where it was probably contracted. Some weeks later two children were taken with it in a family a mile distant, and having no contact with the first case. Succeeding cases, one or more at once, occurred at intervals of a few weeks through the year, twenty-five or thirty in all, of which ten were fatal. There was then a short interval of subsidence, but it reappeared in March of this year, and the place has not since been free from it, new cases occurring at varying intervals, and it is thought that up to this time there have been not less than twenty-five or thirty cases, which would appear to be a moderate estimate as during the year there have been thirteen deaths. Up to the present time twenty-three deaths have occurred. There have been nine deaths within the last two months, and there are now seven sick with diphtheria. Exact report of the number of cases can not be made since some of the physicians have not made regular reports.. They have occurred in all parts of the village, no circumscribed portion of which has been specially affected. It has been limited to young children almost entirely.

An epidemic presenting these phenomena, viz.: Arising after a long period of immunity, originating from an imported case, existing continuously with but short periods of intermission, distributed throughout the locality without local discrimination, leaves little room for doubt that the cause for its perpetuation consists in transmission from one case to another. I found, visiting the place yesterday, a number of unsanitary conditions. The soil is uniformly clay, and the level of ground water over most of the village site, in the interspace between abrupt hills, is not far below the surface. The cellars are damp. There are numerous small ponds a few rods in extent filled with water pretty constantly and some of them having no visible outlet into most of which house-drains empty, making open cesspools of them, not far from dwellings. There are no sewers and lacking them some house drains empty into ditches along the sides of the streets. The village has an abundant water supply, and no provision being made for discharge of waste, the saturation of the soil is of necessity made greater. There is decided need for some system of sewerage, by which this surplusage of water brought in from without could find an outlet as well as to get rid of the filthy ponds and ditches, but the epidemic was not set up by these bad conditions nor to any notable degree maintained by them, though they would no doubt furnish a good soil for the growth and prolonged perpetuation of the disease germs of diphtheria if they should become implanted in any of them.

The epidemic has been kept up by the infection of one from a pre-existing case, which 1 would report, not as having actually traced it in each case but because of the general fact that the disease we know generally spreads in this way. What is necessary to cause its suspension is the enforcement of seclusion of the sick and destruction of all the germs generated by them. This has not been done with sufficient care because the board of health has not secured full reports of cases from physicians and because the management of quarantine and disinfection has been left largely to the medical attendants. Every case should be reported early and the officers of the board should themselves insure a quarantine and see to the subsequent disinfection and purification of the premises as detailed in our diphtheria leaflet. Until this is done it is needless to look for and remove other possibly contributory causes for the existence of this epidemic, desirable as it is certainly is that this should be done. I advised the board of health to this effect and further detailed the state of the case as I have outlined to an assemblage of citizens for the opportunity to do which I was indebted to Hon. Thomas A. Lillie, a former president of the village board of health, who has interested himself in the matter.

Respectfully

F. C. CURTIS.

REPORT ON DIPHTHERIA AT CASSADAGA.

ALBANY, N. Y., *August* 20, 1891.

LEWIS BALCH, M. D., *Secretary of the State Board of Health*:

Sir.— The history of diphtheria at Cassadaga, in Chautauqua county, is as follows:

Eight years ago there was an extensive epidemic of the disease, fifty or more cases occurring within a radius of a few miles from the center of the village, a number of which were fatal. Since that time cases have occasionally occurred, generally in the spring and fall of each year, in the village, and as well, also, in the surrounding country. The present outbreak, of the summer of 1891, begun about the middle of June, and six children were taken with diphtheria, in four different families, within the course of the succeeding six weeks. On account of these and the earlier cases a petition was sent to this board for an investigation, in answer to which I went there August nineteenth. I found the six cases all convalescent or recovered. There was no doubt of their having had diphtheria. They were all children. No schools had been in session, except Sunday schools, for two months, it being the time of summer vacation. None of the houses where there was sickness had a bad sanitary history, and they were not themselves found in bad sanitary condition. They were most of them in rather close proximity to each other.

The village has a population of about 500, scattered along the intersection of two highways. It lies at the lower end of a chain of two or three small lakelets, the outlet to which here passes southward as a small and very sluggish stream, the current of which is impeded by a growth of aquatic plants, and the banks are so flat that the water spreads over much surface, and it is bordered by a wide margin of swampy ground densely grown over with tall grasses and small shrubs. This condition exists for some miles, I think, below the village highway, which it crosses at right angles and soon leaves. Much of the margins of the little lakes is also marshy. The bed of the stream is covered with vegetable silt, and the saturated edges of it are, much of the way, oozing mud. The only source of pollution with animal organic matter is the wash from a cheese factory located near it; this has a drain carried to the little stream for the removal of its waste. At the time I was there this factory was making butter exclusively, the cream only being used for this purpose, and the skimmed milk, which was emptied into vats outside the building, was all of it carried away by the farmers. Consequently, nothing passed into the drain but the wash water used in cleansing the milk cans and utensils, which contained only a little milk. When cheese is made, however, a large amount of whey passes off through the drain and a good deal more waste matter thus passes into the stream, as I was told.

I speak in detail regarding the stream because of a popular impression among the people of the locality that it is in some degree the source of the repeated outbreak of diphtheria among them. There was also no other suspected source of evil nor other public insanitary condition there. There is a large camp-ground on the lake, a mile distant, where for a few weeks in summer 5,000 people gather, and some of their sewage goes into the lakes, but this is too remote to affect Cassadaga, whatever it may effect at the camp-ground itself.

It appears to me that it is now completely established that diphtheria never arises nor exists independently of a pre-existing case. The disease germs can develop in no other way. We also know that they may live many months or for an indefinite period, either in a dormant state or, under conditions favoring their germination and growth, by constant renewal of successive generations. No germs appear to be more tenacious of life.

When a locality is subject to diphtheria as a prolonged epidemic two questions in accordance with these fundamental facts arise: Are the cases of sickness kept strictly secluded and the disease germs developed by them carefully destroyed; and is there any dark, damp, ill-ventilated spot which may have become infected and a culture bed for their indefinitely prolonged perpetuation. Aside from the chance importation from without of disease germs, to which, of course, every locality is liable, there is no need to look beyond these for the cause of the epidemic.

In the present case the sluggish outlet to the lake is the only public insanitary condition. That it could cause diphtheria to develop de novo is certainly impossible; but whether it furnishes a suitable soil for the continuous generation of its disease germs it possibly worthy of consideration. The ideal place for this is an inclosed sewer or a damp, filthy, unventilated cellar. These germs seem to thrive best in the presence of decomposing animal organic matter, and I do not know that they ever maintain an existence in an open stream or its banks, however oozing and saturated, unless nitrogenous animal matter is present.

I should say, therefore, that apart from the pollution of this stream with sewage matter that it would have nothing to do with the prolonged existence of diphtheria there. It should be cleared out and the current run in a more narrow and direct channel; the drainage from the cheese factory referred to should also be kept out of it. Both of these things ought to be done. But the bearing of the stream upon the prevalence of diphtheria seems to me remote.

It remains, therefore, to enforce more stringently the seclusion of the sick, and the disinfection of the premises. I believe that if the regulations of this board are strictly carried out that this locality will be freed from the periodic recurrence of diphtheria.

Very respectfully,

F. C. CURTIS.

Typhoid Fever at Auburn.

A petition to the Governor regarding the appearance of typhoid fever in Auburn and the reason thereof, and requesting his action was referred by him to the State Board of Health for investigation and report. In accordance therewith investigation was made, a recommendation of action looking towards temporary relief was made, and the following report regarding the investigation and the responsibility for future action was made to the Governor.

To His Excellency DAVID B. HILL, *Governor of the State of New York:*

The undersigned, comprising the board of health of the city of Auburn, N. Y., hereby make complaint to Your Excellency of a nuisance, the cause and effect of which is as follows:

The city of Auburn derives its water supply from the Owasco lake, which lies about two miles south of the city, from which there flows through the center of the city of Auburn a stream of water known as the Owasco outlet, into which the entire sewerage of said city is deposited.

Some years ago, the State of New York built a dam near the southern limits of said city and near the pump-house of the Auburn Water Works Company, which company furnishes nearly all the potable water used by the inhabitants of said city. And, as we are informed and believe, said company has the charge and control of said dam and during the summer months, when the water in the lake is low, permits the water from the lake to flow down said outlet only at its pleasure.

At the present time and for several weeks last past, the water in the lake is, and has been very low and does not come within several feet of the top of said dam, so that the only way the water can flow down said outlet is to raise the gates in said dam and permit it to run through, which the water works company neglects and refuses to do.

By reason of the water in said lake being held back as aforesaid, very little water flows down the outlet and through the city, so that the sewerage discharged and deposited by the many sewers in said city into said outlet is not carried off but is left exposed to the action of the air and sun in the very center of the city, forming large ponds of decaying animal and vegetable matter and covering the banks of said stream along its entire length, within the limits of the city, with sewerage from which noxious, foul, offensive and deadly gases and odors arise, contaminating the air and breeding disease and death, endangering the lives and health of the people living along the banks and in the vicinity of said outlet.

We urge upon Your Excellency to act promptly in this matter, as the lives of many people may be endangered by delay; and that, in pursuance of the power vested in you by virtue of the Laws of 1880 (chapter 322, § 8), as amended by the Laws of 1882 (chapter 308), you direct and require the State Board of Health to immediately examine into the nuisance complained of as aforesaid.

Respectfully submitted.

DAVID WADSWORTH, Jr.,
Mayor.

FRANK J. STUPP.

WM. B. HEARTWELL, M. D.

GEO. H. HAILES.

M. S. CUYKENDALL.

ALBANY, *September* 11, 1891.

To HON. DAVID WADSWORTH, Jr., *Mayor*, *City of Auburn*, *N. Y.*:

Sir.—The Governor, on the third instant, referred to this Department the petition signed by yourself and others in reference to the nuisance caused by the holding back of the water of Owasco lake from the outlet by the action of the Auburn Water Works Company, so that there is not sufficient water to dilute the sewage of the city which flows into the outlet. The State Board will examine into the matter as soon as possible. The pressure upon its time from other quarters at present is very great. We shall notify you of the time of visit as soon as it is fixed.

Very respectfully your obedient servant.

LEWIS BALCH,
Secretary.

ALBANY, *December* 8, 1891.

To the Hon. DAVID B. HILL, *Governor of the State of New York:*

Sir.— I have the honor to report in the matter referred by you to the State Board of Health, being a petition of certain residents in the city of Auburn, concerning an outbreak of typhoid fever alleged to be caused by the shutting off of water from the outlet of Owasco lake by those in charge of the State dam, as follows:

The consulting engineer of the Board was directed to examine into the matter of the complaint and submit a report thereon. Your attention is respectfully called to his report hereto appended:

I personally visited Auburn on the fifth of November and in conference with the board of health of that city called attention to the statements made in the engineer's report, showing that the nuisance complained of was caused by the authorities of the city and could be remedied by them if proper action was taken. This was reported by me to the State Board of Health at a meeting held in Albany on November eighteenth, and I was directed to report to your Excellency, as the findings of the Board, that there was no ground upon which it could make any recommendations upon which your Excellency could base an order, the difficulty being such as could be remedied by proper action on the part of the city authorities.

Very respectfully your obedient servant.

LEWIS BALCH,
Secretary.

Report on Sanitary Condition of Auburn.

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *November* 2, 1891.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

Sir.— In company with Assistant Secretary Frederick Carman, I visited Auburn on October second and inspected the localities complained of in the complaint of the citizens of Auburn to the Governor, and extended the inspection to include Owasco lake and a part of Owasco outlet. On the third, Mr. Carman investigated the conditions of localities in which typhoid fever had occurred. Mr. Carman made a preliminary report incorporating recommendations of measures for immediate relief. On October sixteenth and seventeenth, I visited Auburn again in company with Prof. James Stoller and continued the inspection to include Owasco outlet within the city limits, and the villages of Moravia and Groton on Owasco inlet. Samples of water for chemical and biological analysis were obtained from the mill pond in the creek above Moravia, from the same creek below Moravia, from Owasco inlet near the lake, from the head of the lake, the foot of the lake and from Nye's pond in Owasco outlet in the lower part of the city. We have been furnished by the health officer of the city with a list of cases of typhoid fever, detailing certain circumstances in each case, and a map showing the locations of the places on which map the city surveyor has indicated the location of completed sewers. I have the following report to make of the facts in the case and make the subjoined recommendations:

The complaint to the Governor, says:

"The city of Auburn derives its water supply from Owasco lake, which lies about two miles south of the city, from which there flows through the center of the city of Auburn a stream of water known as the Owasco outlet, in which the entire sewerage of said city is deposited.

Some years ago, the State of New York built a dam near the southern limits of said city, and near the pump-house of the Auburn Water Works Company, which company furnishes nearly all the potable water used by the inhabitants of said city. And, as we are informed and believe, said company has the charge and control of said dam, and during the summer months when the water in the lake is low permits the water from the lake to flow down said outlet only at its pleasure.

At the present time and for several weeks last past, the water in the lake is, and has been very low and does not come within several feet of the top of said dam, so that the only way the water can flow down said outlet is to raise the gates in said dam and permit it to run through, which the water works company neglects and refuses to do.

By reason of the water in said lake being held back as aforesaid, very little water flows down the outlet and through the city, so that the sewerage discharged and deposited by the many sewers in said city into said outlet is not carried off but is left exposed to the action of the air and sun in the very center of the city, forming large ponds of decaying animal and vegetable matter and covering the banks of said stream along its entire length, within the limits of the city, with sewage from which noxious, foul, offensive and deadly gases and odors arise, contaminating the air and breeding disease and death, endangering the lives and health of the people living along the banks and in the vicinity of said outlet.

Our first duty was to visit the State dam mentioned in the complaint. We found the water in the stream at this point very low. The passage to the gates in the dam was filled with debris, and it would be difficult for the water to flow out through the gates when they were opened. A saw-mill at one end of the dam and a mill race furnishing water to run the machinery of the water works took all of the water flowing in the stream at the time of our visit. All of this water finds its way back to the stream before any sewage is discharged into the stream. Including the State dam there are ten dams in the stream within the city limits. Drawing water off from the State dam or retaining it probably has less effect on the sanitary condition of the stream than the same operation on any other dam within the city limits. It was evident that the management of the State dam had little effect upon the condition of the stream. The inspection of the other mill ponds showed an increasing amount of pollution down stream, this pollution coming from sewers, garbage dumps, closets, etc., located on the banks. There were evidently large deposits of the solid matter on the bottom. When the mill wheels are running, the water in the ponds is drawn down, exposing the bottom to the action of the sun and permitting the formation and dissemination of noxious gases. The city of Auburn is not yet completely sewered, and new sewers are constructed from to time discharging into the outlet, thus increasing the amount of pollution. The tendency is for the mill ponds to fill up by the deposit of the heavier matters. This tendency will increase. At times of high water there is some tendency to remove these deposits, on account of the larger amount of water flowing and its freer use by the factories through their mill races. The deposits in the eddies and more quiet portions of the ponds are not greatly disturbed, and there is no doubt in my mind that the mill ponds will become of less value for the storage of water from year to year, on account of this filling up. The nuisance in the dams at times of low water will therefore become greater from year to year. It is impossible to permanently and largely increase the low-water flow from the lake, and no manipulation of the flow will stop the deposit of solid matter in the ponds. The preliminary report recommended that the ponds be kept nearly filled. This recommendation was offered for temporary relief only. So long as sewage is discharged into the stream the capabilities of the ponds for producing the nuisance will increase. It will finally become impossible to keep the bottom of the stream covered beyond the possibility of producing the nuisance. It is evident in some places even now that the water itself is so seriously polluted as to become a source of complaint. As the amount of sewage discharged into the stream increases, the pollution of the water will increase, until within a few years the water itself will produce an intolerable nuisance without any aid from the uncovered deposits on the bottom.

It has been suggested that the volume of flow in dry seasons can be increased by deepening the outlet above the State dam and manipulating the dam in such a way as to make the lake a storage reservoir. This can be done. The area of Owasco lake is approximately 7,000 acres. The difference of level between extreme low water and the top of the dam is five feet. It will be necessary to begin the restriction of the use of water at the time that water ceases to flow over the dam. An average flow of water through the gates, which will distribute the water stored between the level of the top of the dam and present low water level, over an assumed length of dry season, must be determined, and the opening in the gates must be changed from time to time to keep this average flow. It evidently makes no difference whether this water runs through the gates in the dam or through the mill wheels. It is evident that the supply to the mills will be reduced during the time which it takes the water in the lake to fall from the level of the top of the dam almost to low water and that the supply to the mills will be increased during the time which corresponds to the present low water stage. A computation of the probable amount of this average daily flow indicates that it will not be more than twice the present low water flow of 4,000 cubic feet a minute, if the continuation of the dry weather is stated at 200 days, or three times, if 120 days is taken as its duration. This is not sufficient to supply the mills entirely and obviate the necessity of drawing down their ponds. I do not know whether such management of the gates will be satisfactory to the mill owners or whether they have any rights in the matter which must be acquired. It would be possible to increase the lake storage which could be drawn upon, by deepening the outlet. The supply of water which can be drawn from the lake will be increased in proportion to the deepening of the channel. Should the channel be deepened five feet, the lake storage to be drawn upon will be nearly doubled, and the average daily flow can be almost doubled. This flow is still insufficient to obviate the necessity of drawing down the mill ponds, and uncovering the deposits on the bottom.

Should this utilization of the storage capacity of the lake be made, the time when the water itself will be so polluted as to produce a nuisance will be postponed, but the natural increase in population and the construction of sewers will, in time, more than make up for the increased low water flow. The lowering of the lake to give additional storage will of course affect all persons residing on the lake shore, and will probably give rise to claims for damages. The increased deposits above noted will operate to continue the present nuisance without any diminution, if not with a decided increase. The increased flow at seasons of low water is still insufficient, under any reasonable supposition as to the growth of the city and the increase of the sewage, to prevent the water itself becoming a nuisance. The indications are, therefore, unmistakable that the only permanent cure for the present bad condition of the stream is the removal of all sewage therefrom. This can be accomplished by one or more intercepting sewers, which shall take the sewage below the city. It is probable that some method of sewage purification will here be necessary, to prevent nuisance to persons residing along the stream below the city. The proposed deepening of the channel would be but a partial solution of the problem, which might delay the necessity of putting in the intercepting sewers for a short time. The expense of deepening the channel would not be less than $10,000, and the postponement of the construction of the intercepting sewers for the few years thus made possible would not be worth this sum.

The map shows the extent of the sewer system of the city at present constructed and will make it possible to form some estimate of the amount of sewage discharged into the outlet. All of the older sewers were improperly constructed and are subject to deposit, are not tight, are unventilated and are in positions to receive the emanations from the bed of the stream when it is uncovered. Investigation of a number of houses showed either an entire lack of traps or defective plumbing, which permitted the escape of sewer gas into the houses. The bad condition of the ponds and of the sewers themselves, and the saturation of the soil surrounding the sewers by the leakage therefrom, make the gases greater in quantity and more dangerous than usual in sewers. This seems to be especially true of the sewers discharging into Nye's pond, which pond, owing to its size, is more subject to deposit than the others, exposes more surface when the water is drawn down, and is consequently in worse condition. An inspection of the map will show that most of the cases of typhoid fever occurred on streets near the outlet or having sewers discharging directly into it. The following table furnished us by the health officer gives the local conditions of most of the cases. The map shows a few more which were reported after this table was prepared.

STREET.		House number.	Work in mill.	Connect with sewer by slop sink.	Connect with sewer by water closet.	Connect with sewer.	Use well water.	Use city water.
Washington	Two cases	81	x	x	x	x	....	x
Washington	Two cases	67	x	....	....	x	....	x
Washington	....	92	x	x	...	x	....	x
Washington	....	66	x	....	....	....	x	....
State	....	182	....	x	....	....	x	....
Wall	Three cases.	43	....	....	....	....	x	....
Wall	....	74	x	x	x	x	....	x
Wall	....	49	x	x	....	x	x	...
Wall	....	45	....	x	....	x	x	....
Wall	....	83	x	....	....	....	x	....
West	....	64	....	....	....	...	....	x
West	....	68	....	x	....	....	....	x
West	....	72	....	....	....	....	....	x
West	....	62	...	....	....	....	....	x
Owasco	....	24	....	x	....	x	x	....
Seymour	....	231	x	....	....	x	x	x
Seymour	....	263	x	....	....	....	x	...
Derby avenue	Two cases	20	x	x	....	x	....	x
North Division	....	26½	x	....	....	....	....	x
North Division	....	24	x	....	....	....	....	x
North Division	....	20½	x	....	....	....	....	x
North Division	....	65	x	....	.. .	....	....	x
South Division	....	3	....	....	....	....	x	....
South Division	....	8	x	....	....	....	x	....
South Division	....	4	x	....	....	....	x	....
Bradford	Four cases	32	x	....	....	....	x	...
Van Anden	....	104	....	....	....	....	x	....
Van Anden	Three cases.	82	....	x	....	....	....	x
Augustus	Imported	33	....	x	....	x	x	....
Barber	....	30½	x	....	....	....	....	x
Delevan	....	8	x	....	....	....	....	x
Cross	Imported	21	....	x	....	x	x	....

STREET.		House number.	Work in mill.	Connect with sewer by slop sink.	Connect with sewer by water closet.	Connect with sewer.	Use well water.	Use city water.
Cross	....	27	....	....	....	x	x	....
Frazee	....	13	....	....	....	...	x	....
Mechanic	Imported	126	....	....	....	x	....	x
Orchard	....	89	....	....	....	....	x	....
Jefferson	....	30	x	....	....	x	....	x
Underwood	....	3½	....	....	....	....	x	....
Genesee	....	214	....	....	...	....	...	x
East Genesee	....	20	x	....	....	....	....	x
Perrine	Imported	118	....	....	....	....	x	....
Garfield	Two cases	13	x	....	....	....	x	....
Clark	Clark block	......	....	x	x	x	....	x
Myrtle avenue	....	17	....	....	....	....	x	....
Grant	....	41	....	....	....	....	x	....
Kelsey avenue	....	2	x	....	....	....	x	....
North Division	....	75	x	....	....	....	....	x
North	....	19	....	x	x	x	....	x
Mattie	....	10	....	....	....	....	x	....

An examination of the table shows that nearly all of the cases occurred in houses with sewer connections or among employes of mills located on the banks of the stream. With but four exceptions the cases not included in the above classes used well water.

It is difficult to make the city water supply responsible for any of the trouble; on the other hand it is very easy to trace the connection of the epidemic with the bed of the outlet, sewers and house connections. However, it was thought advisable to investigate the condition of the water supply. An inspection of the shores of the lake showed a large number of summer cottages and hotels and a smaller number of farm-houses draining more or less directly into the lake. The total number of these is about 170. There are also two large hotels and a barrel factory. In the village of Moravia about 80 houses, stores, factories, barns, etc., were found draining into a branch of Owasco inlet, and at Locke and Groton about sixty such sources of pollution are found on the inlet itself. The effect of the pollution upon the water of the stream and of the lake is shown by the following statement of the results of analyses. I give the report of Dr. Tucker upon the chemical analysis and his comments upon the same.

Results of Analysis of Auburn Waters Taken from Owasco Lake, its Inlet and Outlet.

(*Results in parts per* 100,000.)

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.
Source	Moravia dam, above village.	Creek at railroad bridge below Moravia.	Owasco creek, near mouth.	Owasco lake, near head.	Owasco lake at water works inlet.	Nye's pond, below Auburn.
Color and appearance	Transparent; slightly yellowish; very slight sediment.	Transparent; yellowish; very slight sediment.	Transparent; alm'st colorless; slight browish sediment.	Transparent; alm'st colorless; very slight sediment.	Transparent; alm'st colorless; no sediment.	Transparent; slightly yellowish; some flocculent sedim't.
Odor at 100° Fahr.	None.	None.	Sligh'y swampy.	None.	None.	Unpleasant.
Chlorine in chlorides	0.385	0.420	0.595	0.420	0.385	0.910.
Free ammonia	0.0140	0.0190	0.0100	0.0120	0.0060	0.1890.
Albuminoid ammonia	0.0090	0.0110	0.0060	0.0090	0.0060.	0.0320.
Nitrites	None	None.	None.	Trace	Trace	Decided traces.
Total solids	17.00	17.60	20.60	17.00	16.00.	18.00.
Loss on ignition	2.00	2.40	3.60	3.60	3.00.	4.00.
Behavior on ignition	Slight darkening.	Slight blackening.	Slight blackening.	Slight darkening.	Slight darkening.	Some blackening.
Mineral matter	15.00	15.20	17.00	13.40	13.00	14.00.

ALBANY, N. Y., *October* 30, 1891.

DR. LEWIS BALCH, *Secretary State Board of Health, Albany:*

SIR.— I inclose herewith tabulated results of the analyses of the six samples of water taken from Owasco lake, Auburn, N. Y., its inlet and outlet. The samples were received on the seventeenth instant, and the analyses were made by Mr. E. J. Wheeler, assistant in this laboratory. From the results it will be seen that No. 1 is in most respects of fair quality; No. 2, less satisfactory; No. 3, in some respects superior to No. 1, though the chlorine and total solids are increased; No. 4, not very different from No. 1, though showing a trace of nitrites; No. 5, in most respects of very satisfactory quality though a trace of nitrites is present and the free ammonia higher than in the better class of waters and No. 6 showing decided evidence of sewage pollution.

Yours respectfully.

W. G. TUCKER,

Director State Laboratory.

The results of biological analysis, made by Prof. James Stoller, are as follows:

SAMPLE NUMBER.	Place.	Average No. of bacteria in one cubic centimeter.
1	Mill pond above Moravia	68
2	Creek below Moravia	3,750
3	Owasco inlet near lake	205
4	Owasco lake near head	14
5	Owasco lake at water works intake	11
6	Owasco outlet below Auburn	27,741

A consideration of both series of results indicates an excellent condition of the water at the intake of the water works. The samples were taken after the summer residents had left their cottages, so that the results of the examination of the lake possibly do not show the maximum amount of pollution. I understand there has been no complaint of typhoid fever among the cottagers or at any place along the watershed, so that there is no probability that typhoid fever germs have been discharged into the lake. I can see no ground for any suspicion of the water supply, in connection with the epidemic of typhoid fever just passed. To avoid the possibility of any danger from pollution in the future, I would recommend that the watershed be subjected, in the manner prescribed by law, to rules providing for the protection of the purity of the water. This should be done as a precautionary measure as there is a slight possibility of a dangerous pollution of the water from some one or more of the present sources and little or no attention has been paid in the past to the matter of restricting the discharge of sewage into the lake and its tributaries.

I would mention that at the time of our second visit the epidemic had abated. Some days of cold weather had greatly retarded the fermentation and decay of the deposits on the bed of the stream and had by so much improved its condition. All of the mill ponds but Nye's pond were nearly filled when observed and with that exception the mill owners seemed to be carrying out the recommendation in the preliminary report, that the mill ponds be kept nearly full until rains had increased the flow of water in the stream.

To sum up the results of the investigation:

1. We could not trace a connection of the epidemic of typhoid fever with the city water supply.

2. It seemed easy to us to connect the epidemic with the polluted condition of the outlet, the sewers and the house connections.

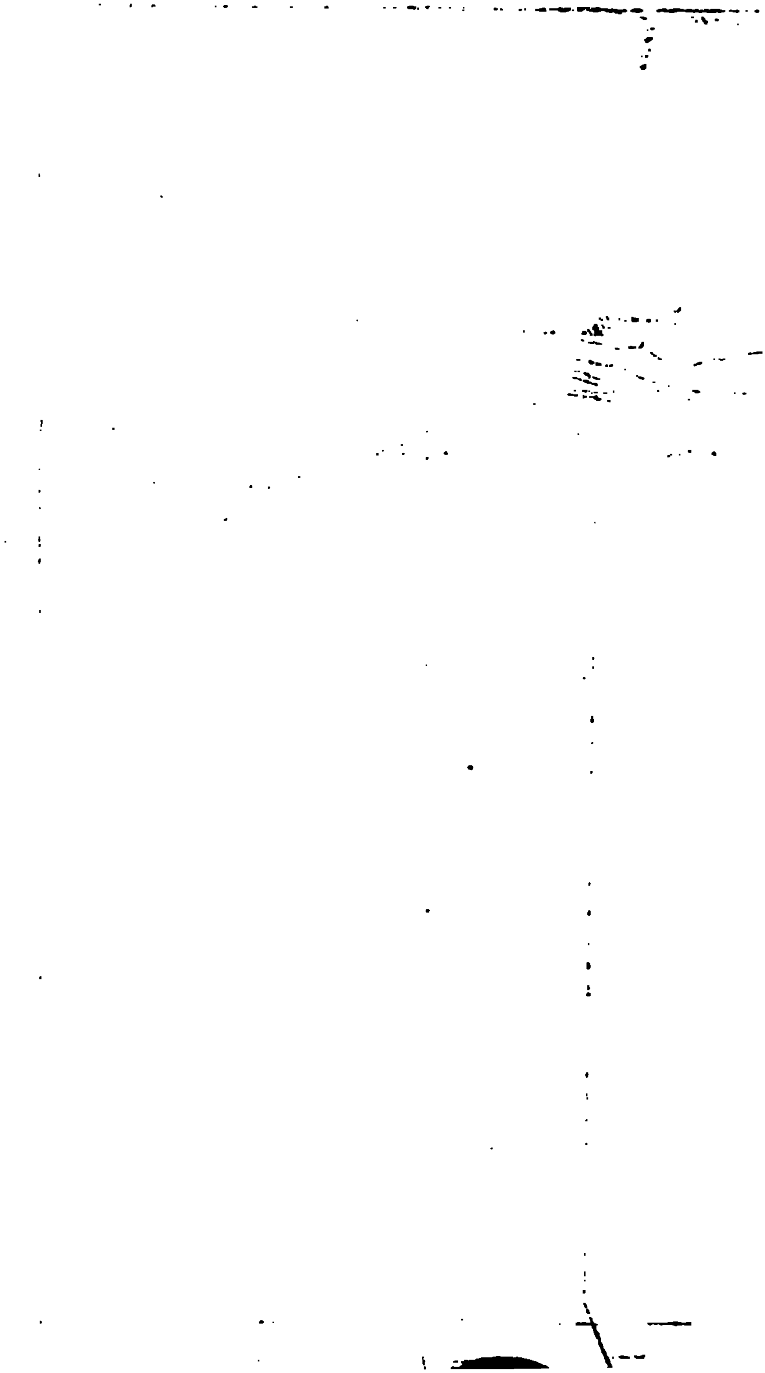
3. The condition of the outlet where polluted by sewage is evidently a menace and danger to the public health, which will increase.

4. Any manipulation of the State dam or any deepening of the outlet above the dam to increase the low water flow of the stream, will be but a partial solution of the difficulty which will hardly be worth what it will cost.

5. The only complete solution is a removal of the sewage from the stream, which can only be done by building one or more intercepting sewers which shall discharge the sewage below the city; and the reconstruction of defective sewers and house connections.

Respectfully submitted.

CHAS. C. BROWN,
Civil Engineer.



REPORT

OF

WILLIS G. TUCKER, M. D., PH. D.,

ANALYST OF DRUGS.

LEWIS BALCH, M. D., *Secretary of the State Board of Health of New York:*

Dear Sir.— During the first six months of the past year (1891) the collection and examination of drugs from retail dealers throughout the state was continued, under your direction, in essentially the same manner as heretofore. Three hundred and ninety-one samples of pharmacopoeial drugs, preparations and chemicals were examined up to July 1, 1891, and monthly reports were made upon these samples. On that date the entire work was placed in my hands and Mr. E. J. Wheeler was appointed assistant chemist and Dr. A. G. Losee collector and laboratory assistant, since which time a much larger amount of work has been done than before. During the last six months of the year both foods and drugs were collected for examination, 1,407 samples having been collected and examined, making a total of 1,798 samples examined and reported upon during the year, besides other analyses and other analytical work done from time to time by direction of the Board. The monthly reports on food and drug samples have been accompanied by separate reports on each sample examined, stating the record number and pharmacopoeial name of the article taken, if an officinal drug; name and place of business of dealer from whom sample was purchased; date of purchase; amount called for; price paid, and name of collector. The quality of the article, as determined by the examination made, has also been stated. Concerning the standards employed, in the case of drugs, I quote from a previous report: "Samples are classed as of 'good quality' when they fulfill the requirements of the United States pharmacopoeia or fall below the same, only in some trifling and unimportant respect; of 'fair quality' if, while not fully up to the pharmacopoeial standard, they are evidently neither intentionally adulterated nor decidedly below such standard, and of 'inferior quality,' if clearly adulterated or falsified, lacking in any important constituent, deficient in strength from improper manufacture, partial or complete decomposition or other causes, or containing an undue amount of impurity. In some cases, through ignorance or intent, a wrong article has been sold or some inferior article of a nature similar to that called for has been substituted, and such samples have been classed under the head 'not as called for.' Articles like the diluted acids, possessing excessive strength, have been classed under that head." A limited number of important non-pharmacopoeial drugs, like antipyrine, have been examined, but the preference has been given, as heretofore, to pharmacopeial articles. In the case of foods, harmless adulterants added as make-weights or accidentally present, as well as harmful adulterants or deleterious constituents have been looked for and samples reported as of good, fair or inferior quality, adulterated or falsified, as the case might be. Some samples, as of tea, have been reported as "unadulterated," when no distinctly foreign matter has been detected, but this is not meant necessarily to imply that the article so reported is of the best quality. The reports have also stated the respect in which samples not of good quality have been found to be deficient or inferior, and have given such other particulars as have been deemed necessary in special cases. Not having been published elsewhere these reports are now collected and embodied in this annual report. All samples have been examined as soon as possible after collection, especially in the case of articles liable to decompose on keeping, and reports have generally been made within a month of the time of collection.

Selection of Samples.

No attempt has been made to collect a wide variety of articles, for the object of the work, as now carried on, is not so much to determine the proportion of adulterated to pure drugs and foods now found upon the market as to expose actual adulteration, sophistication and carelessness in the preparation of common drugs, pharmacopoeial compounds and foods; inform the public and caution dealers. Therefore, such as are known to be seldom adulterated or impure have not been called for, but such substances have been selected as would test the knowledge, accuracy and integrity of the dealer.

Notification of Dealers.

Notices have, as heretofore, been promptly sent from the central office to all dealers whose samples have been found to be of inferior quality, warning them to desist from the sale of such articles, and it is believed that these notices, which have in most cases been gratefully received and cheerfully complied with, have had a most salutary effect in correcting various errors and abuses. In a number of cases dealers thus notified have written for further information, or to explain, excuse or deny the sale of samples complained of, but it has been in no case shown that any reasonable cause for complaint existed. In the tables accompanying this report the name and residence of all dealers from whom samples have been collected and the quality of the articles sold are stated.

Collection of Samples.

The 1,798 samples examined during the year were collected in the following places: Albany, Amsterdam, Auburn, Ballston, Bath-on-the-Hudson, Canandaigua, Cohoes, East Albany, Fort Edward, Frankfort, Geneva, Glens Falls, Greenbush, Herkimer, Hudson, Ilion, Kingston, Lansingburgh, Little Falls, Lyons, Mechanicville, Mohawk, Newark, Newburgh, Palmyra, Poughkeepsie, Rochester, Rome, Sandy Hill, Saratoga Springs, Schenectady, Seneca Falls, Syracuse, Troy, Utica, Waterford and West Troy. In every instance, in the collection of drugs, a written order has been tendered, and this order has given the officinal name of all pharmacopoeial articles and the amount desried. Trivial or common trade names have never been employed, and no valid excuse can therefore be urged by the seller for error or substitution in filling orders so explicit. Proper questions that have been asked by dealers have always been answered by the collector, and, while the fact that the articles were required for State Board of Health examination has not been stated, it has never been denied. All samples have been numbered and fully labeled (the original label, if attached by the seller, being also preserved) and kept a reasonable length of time for subsequent examination, if necessary, in any disputed case.

The following tables show the nature and number of the samples examined and the places where purchased:

TABLE OF SAMPLES, ETC.—Drugs.

ARTICLES.	PLACE WHERE PURCHASED.																		
	Albany.	Amsterdam.	Auburn.	Ballston.	Bath-on-Hudson.	Canandaigua.	Cohoes.	East Albany.	Fort Edward.	Frankfort.	Geneva.	Glens Falls.	Greenbush.	Herkimer.	Hudson.	Ilion.	Kingston.	Lansingburgh.	Little Falls.
Acetic acid, diluted	24	1	....	1	....	....	....	2	....	....	....	2	1	....	....	....	....	....	1
Antifebrin	....	6	....	....	....	....	....	....	....	....	....	....	....	1	....	2	1	....	2
Antipyrin	....	5	....	....	....	....	....	....	....	1	....	....	....	1	2	1	....	....	2
Brandy	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Chloroform, purified	....	....	....	....	....	5	....	....	....	....	5	....	....	....	....	....	....	....	....
Ether, compound and spirit of	....	2	8	4	....	....	....	....	2	1	....	5	....	2	....	1	....	....	1
Ether, spirit of nitrous	44	5	8	5	1	....	....	4	6	2	1	11	2	3	8	2	1	....	3
Ether, stronger	....	5	....	4	....	3	....	....	2	....	1	3	....	....	....	1	....	....	2
Hydrobromic acid, diluted	....	1	3	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	....
Hydrochloric acid, diluted	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Hydrocyanic acid, diluted	....	3	....	3	....	....	....	....	1	....	....	3	....	1	....	....	1	....	1
Ipecac, powdered	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Nitric acid, diluted	....	....	....	....	....	....	....	....	....	....	....	....	....	....	8	....	....	....	....
Nux vomica, tincture of	....	....	....	....	....	2	....	....	....	....	4	....	....	....	....	....	....	....	....
Phenacetin	....	6	....	....	....	....	....	....	....	....	....	....	....	1	....	1	1	....	2
Potassium, bitartrate of	27	....	1	5	....	1	7	....	....	3	1	....	....	....	14	....	....	2	....
Potassium, bromide of	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Saffron (*Crocus*)	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....
Seidlitz powder	....	....	....	....	....	....	....	....	....	....	....	....	....	....	7	....	....	....	....
Sodium, bromide of	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sodium, sulphite of	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sulphur, precipitated	....	....	....	....	....	5	....	....	....	....	4	....	....	....	....	....	....	....	....
Sulphur, washed	20	....	....	....	....	....	....	....	2	....	....	1	1	....	....	....	....	....	....
Sulphuric acid, diluted	....	....	5	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....
Whisky	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Totals	115	34	25	23	1	16	7	6	15	8	16	29	4	9	39	8	5	2	14

Table of Samples, Etc.— Drugs -- (*Concluded*).

ARTICLES.	Lyons.	Mechanicville.	Mohawk.	Newark.	Newburgh.	Palmyra.	Poughkeepsie.	Rochester.	Rome.	Sandy Hill.	Saratoga Spr'gs.	Schenectady.	Seneca Falls.	Syracuse.	Troy.	Utica.	Waterford.	West Troy.	Total number.
	PLACE WHERE PURCHASED.																		
Acetic acid, diluted	1	1	....	1	....	....	....	11	6	1	2	....	....	14	8	....	1	....	78
Antifebrin	....	....	1	....	8	....	....	....	....	....	....	8	....	4	7	5	....	....	45
Antipyrin	....	....	1	....	13	....	3	....	....	....	....	7	....	6	6	5	....	....	53
Brandy	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	3
Chloroform, purified	1	....	....	1	....	1	....	....	....	....	....	....	4	....	....	....	....	....	17
Ether, compound and spirit of	3	2	1	1	3	2	....	29	6	1	7	1	1	39	6	7	2	....	137
Ether, spirit of nitrous	3	2	2	2	11	2	11	32	7	4	11	7	1	57	17	11	1	1	288
Ether, stronger	....	1	1	....	....	....	....	....	....	2	4	7	....	19	....	5	1	....	61
Hydrobromic acid, diluted	1	....	....	....	5	....	3	8	5	1	10	....	....	7	2	....	....	....	50
Hydrochloric acid diluted	....	....	....	....	1	....	....	....	....	1	....	....	....	6	14	....	....	2	26
Hydrocyanic acid, diluted	....	1	1	....	6	....	....	....	....	....	4	6	....	3	3	6	2	....	45
Ipecac, powdered	....	....	....	....	....	....	....	....	....	....	....	....	....	....	18	....	....	2	20
Nitric acid, diluted	....	....	....	....	4	....	....	....	....	....	....	....	....	8	....	1	....	....	21
Nux vomica, tincture of	1	....	....	1	....	1	....	3	....	....	....	....	1	13	....	....	....	....	26
Phenacetia	....	....	....	....	10	....	....	....	....	....	....	8	....	....	6	5	....	....	40
Potassium, bitartrate of	1	....	....	1	....	1	17	10	....	....	10	....	....	12	31	9	....	....	153
Potassium, bromide of	....	....	....	....	....	....	....	....	2	....	....	....	....	9	....	....	....	....	11
Saffron (*Crocus*)	....	....	....	....	....	....	....	....	7	1	....	....	....	24	....	....	....	....	33
Seidlitz powder	....	....	....	....	....	....	7	....	1	....	....	....	....	2	....	....	....	....	17
Sodium, bromide of	....	....	....	....	....	....	....	....	1	....	....	....	....	7	....	....	....	....	8
Sodium, sulphite of	....	....	....	....	....	....	....	....	....	....	....	....	....	5	....	....	....	....	5
Sulphur, precipitated	1	....	....	1	....	1	....	....	....	1	....	....	3	20	....	....	....	....	36
Sulphur washed	....	....	....	....	....	....	....	....	....	....	....	....	2	15	....	....	....	....	41
Sulphuric acid, diluted	1	1	....	2	....	2	....	15	7	....	....	1	....	17	6	3	....	....	62
Whisky	....	....	....	....	....	....	....	....	....	....	....	....	....	7	....	....	....	....	7
Totals	13	8	7	10	61	10	41	108	42	12	48	45	12	297	124	57	7	5	1,283

TABLE OF SAMPLES, ETC.— Foods.

ARTICLES.	PLACE WHERE PURCHASED.																		Total number.
	Albany.	Auburn.	Ballston	Canandaigua.	Cohoes	Frankfort.	Geneva.	Hudson.	Lansingburgh.	Lyons.	Newark.	Palmyra.	Poughkeepsie.	Rochester.	Saratoga Springs.	Syracuse.	Troy.	Utica.	
Coffee	47	1	5	1	9	3	1	12	3	1	1	1	23	1	10	12	40	11	182
Jellies																4			4
Mustard		1		1			1			1	1	1		1		6			13
Pepper, ground black	1	1	5	1	9		1	13	3	1	1	1	18	1	10				66
Pickles, cucumber													2						2
Sugar, cut loaf	16																		16
Sugar, granulated	54																		54
Sugar, powdered	23					3											36	11	73
Syrup, maple														1					1
Tea, black			5		3			13					20		10				51
Tea, green			5		3			14	1				20		10				53
Totals	141	3	20	3	24	6	3	52	7	3	3	3	83	4	40	22	76	22	515

Methods of Analysis.

In the case of officinal drugs and preparations the standard or quality prescribed by the Pharmacopoeia being the legal standard to which articles included therein must conform, the pharmacopeial tests and analytical methods have been generally followed. Concerning sweet spirit of nitre, I quote from last year's report: "In the examination of sweet spirit of nitre the method of A. H. Allen, of Sheffield, England ("Commercial Organic Analysis," 1885, vol. I, p. 150; also Phar. Jour. and Transactions, Feb. 21, 1885, p. 673, and Nov. 21, 1885, p. 440), as slightly modified and recommended by Dr. E. R. Squibb (Ephemeris, vol. III, p. 1195), has been followed. It may here be remarked that sweet spirit of nitre made by the present U. S. P. process can never contain the quantity of ethyl nitrite claimed for it in the Pharmacopoeia, and this fact has been taken into consideration in rating the samples examined. The U. S. P. process as given in that work from 1820 to 1860 inclusive, gave a product containing in reality about four per cent of real ethyl nitrite, while the process of 1870, according to Dr. Squibb, gave a product of about one-third the strength, and the present process yields a product containing about 2.83 per cent of real ethyl nitrite instead of the four per cent claimed for it. Dr. Squibb has perfected a process, which it is to be hoped will be adopted in the revision of the forthcoming Pharmacopoeia of 1890, which gives a product containing five per cent of ethyl nitrite but it has not, as yet, been generally adopted. Many pharmacists neither make their own sweet spirit of nitre nor purchase from manufacturers, but prepare the article from "concentrated nitre," a non-officinal preparation, by diluting it with alcohol. This may, or may not, according to circumstances, yield a good article and the subject will be again referred to when the samples examined are described later on in this report." As regards the drugs and also foods, exhaustive analyses have seldom been necessary, though in most cases at least one quantitative determination has been made. The object has been to ascertain, in the case of pharmacopoeial drugs, whether the article deviated in any material respect from the officinal requirements, and, in the case of foods, whether any important adulterant was present, and more than this has not been deemed necessary.

Summary of Results.

Of the 1,283 samples of drugs examined, there were classed as of

Good quality	623, or 48.6 per cent.
Fair quality	117, or 9.1 per cent.
Inferior quality	466, or 36.3 per cent.
Not as called for	37, or 2.9 per cent.
Excessive strength	40, or 3.1 per cent.

As stated in previous reports these percentages "by no means represent the proportions of good, bad or indifferent drugs on the market and on sale at the stores, since only those articles which were considered likely to be adulterated or known to be frequently of inferior quality were collected. Had samples of drugs and pharmaceutical preparations been selected at random the proportion of pure and good articles would have been very much larger." The samples wrongly sold and reported above as "not as called for" consisted chiefly of common safflower sold for real saffron, and the articles reported as of "excessive strength" were mainly diluted acids which were twenty-five per cent or upwards too strong, in some cases the concentrated acids being dispensed when the diluted were called for.

Of the 515 samples of foods examined, there were classed as of

Good quality	372, or 72.2 per cent.
Fair quality	8, or 1.6 per cent.
Inferior quality	135, or 26.2 per cent.

DRUGS.

The following were the articles examined:

Diluted Acetic Acid—(*Acidum Aceticum dilutum, U. S. P.*).

Seventy-eight samples examined, of which there were of good quality, twenty-one; fair, seventeen; inferior, twenty-five, and of excessive strength, fourteen. One sample consisted of diluted sulphuric acid. Diluted acetic acid should contain six per cent of absolute acid. Samples containing from 5.5 to 7.5 per cent have been rated as good; 4.5 to 5.4 per cent, fair; under 4.4 per cent, inferior, and over 7.5 per cent as of excessive strength. Many of the samples had evidently been prepared without any regard to accuracy, and in some cases the practically undiluted acid was sold. While it is not expected that such preparations will be made with scientific precision, gross carelessness in their preparation is entirely inexcusable. Diluted acetic acid is employed in the preparation of "spirit of mindererus," and if it is below or above the proper strength this solution will be either too weak or too strong, neither of which conditions is desirable. The following table gives a description of each of the samples:

Diluted Acetic Acid, U. S. P.

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
	1891.					
2416	January	14	Ferris & Viele	Glens Falls	9.8	Excessive strength.
2417	January	14	Leggett & Peddie	Glens Falls	31.2	Excessive strength.
2421	January	14	Flood & Kingsley	Sandy Hill	6.4	Good.
2444	January	14	C. C. Wells	Saratoga	32.1	Excessive strength.
2445	January	14	C. F. Fish	Saratoga	4.1	Inferior quality.
2527	March	17	G. H. Orsor	Albany	5.3	Fair.
2528	March	17	T. J. Lewi	Albany	4.1	Inferior.
2529	March	17	Otto Scholz	Albany	14.0	Excessive strength.
2530	March	17	Louis Sautter	Albany	5.6	Good.
2531	March	17	Charles Van Loon	Albany	5.1	Fair.
2532	March	17	William Sautter	Albany	4.9	Fair.
2533	March	17	Eugene Hardin	Albany	32.1	Excessive strength.
2549	March	17	Bassett & Brumaghim	Albany	4.3	Inferior.
2550	March	17	Dalrymple & Warner	Albany	5.3	Fair.
2551	March	17	J. M Bandorf	Albany	5.5	Good.
2552	March	17	D. Donnelly	Albany	13.2	Excessive strength.
2553	March	17	Bassett & Brumaghim	Albany	4.3	Inferior.
2554	March	17	D. H. F. Drug Co.	Albany	4.7	Fair.
2555	March	17	T. W. Nellis	Albany	3.0	Inferior.
2556	March	17	A. B. Huested & Co.	Albany	6.4	Good.
2557	March	19	A. R. Miller	Albany	6.0	Good.
2558	March	19	Arch. Gilbert	Albany	13.7	Excessive strength.
2559	March	19	Howard Miller	Albany	5.7	Good.
2560	March	19	C. E. Lloyd	Albany	4.7	Fair.

Diluted Acetic Acid, U. S. P.—(*Continued.*)

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
	1891.					
2561	March	19	H. Pareira & Co	Albany	5.5	Good.
2586	March	27	P. Donnelly	East Albany	31.8	Excessive strength.
2587	March	27	Cody's Pharmacy	East Albany	7.5	Good.
2588	March	27	Wm. Herrington	Greenbush	5.4	Fair.
2597	March	27	G. E. Ferguson	Albany	4.1	Inferior.
2598	March	27	A. L. George	Albany	7.5	Good.
2599	March	28	E. F. Hunting	Albany	4.9	Fair.
2600	March	28	Dr. T. K. Perry	Albany	30.0	Excessive strength.
2711	May	28	O. P. Barnum	Syracuse	3.6	Inferior.
2712	May	28	W. B. Fuller	Syracuse	6.3	Good.
2713	May	28	W. D. Tallman	Syracuse	6.4	Good.
2714	May	28	T. C. Joslyn & Co	Syracuse	3.2	Inferior.
2715	May	28	J. J. Taylor	Syracuse	25.8	Excessive strength.
2716	May	29	Smith & Mott	Syracuse	3.6	Inferior.
2782	May	29	A. J. Broughton	Rome	3.9	Inferior.
2783	May	29	Graves & Reifert	Rome	4.9	Fair.
2784	May	29	J. G. Bissell & Co	Rome	5.9	Good.
2785	May	29	F. J. Hagar & Co	Rome	3.2	Inferior.
2786	May	29	J. Halstead	Rome	5.9	Good.
2787	May	29	F. J. Hengge	Rome	6.1	Good.
6	July	2	A. M. Knowlson	Troy	6.1	Good.
7	July	2	Drake & Moffit	Troy	4.6	Fair.
8	July	2	H. Gnadendorff	Troy	7.5	Good.
9	July	2	D. F. Magill	Troy	4.6	Fair.

10	July	2	H. Schneider	Troy	3.5	Inferior.
11	July	2	J. M. Donnelly	Troy	3.8	Inferior.
12	July	2	Moncrief & Francis	Troy	3.8	Inferior.
13	July	2	C. H. Wilberly	Troy	3.4	Inferior.
288	July	24	Bradford & Lindsay	Amsterdam	5.2	Fair.
410	August	8	J. H. Smith	Little Falls	31.7	Excessive strength.
763	September	18	F. E. Mitchell	Ballston	4.1	Inferior.
764	September	18	C. H. Whitney	Mechanicville	4.1	Inferior.
765	September	18	J. Higgins & Co	Waterford	6.6	Good.
1148	October	13	G. W. Koester	Lyons	4.1	Inferior.
1149	October	14	M. W. Palmer	Newark	3.6	Inferior.
1150	October	15	W. W. Steele	Rochester	4.3	Inferior.
1151	October	15	G. W. Howell & Son	Rochester	15.7	Consists of diluted sulphuric acid; error in sale.
1152	October	15	W. W. Scott	Rochester	3.2	Inferior.
1153	October	16	Genesee Pharmacy	Rochester	6.1	Good.
1154	October	16	P. G. Siener	Rochester	9.2	Excessive strength.
1155	October	16	E. A. Cowley	Rochester	3.9	Inferior.
1156	October	16	G. Aahn	Rochester	3.5	Inferior.
1157	October	16	S. A. Merriam	Rochester	3.0	Inferior.
1158	October	16	R. Kimpton	Rochester	3.0	Inferior.
1159	October	16	Craig & Stewart	Rochester	6.4	Good.
1190	October	15	J. C. Lung	Rochester	......	Good.
1369	November	10	W. B. Bissell	Syracuse	4.8	Fair.
1370	November	10	Brown & Dawson	Syracuse	6.8	Good.
1371	November	11	Smith & Mott	Syracuse	4.5	Fair.
1372	November	12	Taylor & Treat	Syracuse	4.6	Fair.
1373	November	12	W. D. Tollman	Syracuse	9.5	Excessive strength.
1374	November	12	W. B. Fuller	Syracuse	9.4	Excessive strength.
1375	November	12	R. Bodden	Syracuse	5.2	Fair.
1376	November	12	J. M. Cummings	Syracuse	5.3	Fair.

Antifebrin — (*Acetanilid*).

Forty-five samples examined, all of good quality, as follows:

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.				
2723	May	27	J C. Bowe	Syracuse	Good.
2724	May	27	Coogan & Quigley	Syracuse	Good.
2725	May	27	P. L. Ryan & Co	Syracuse	Good.
2726	May	28	Kenyon, Potter & Co.	Syracuse	Good.
26	July	2	H. Gnadendoff	Troy	Good.
27	July	2	Drake & Moffitt	Troy	Good.
28	July	2	D. Magill	Troy	Good.
29	July	2	H. Schneider	Troy	Good.
30	July	2	G. W. Holcourt	Troy	Good.
31	July	2	W. M. Groom & Co	Troy	Good.
32	July	2	F. M. Brower	Troy	Good.
252	July	16	I. C. Chapman	Newburgh	Good.
253	July	16	Theo. Merrit	Newburgh	Good.
254	July	16	Geo. Kraft, Jr.	Newburgh	Good.
255	July	16	L. Y. Wiggins & Son	Newburgh	Good.
256	July	16	Ira Caldwell	Newburgh	Good.
257	July	16	A. De W. Jones	Newburgh	Good.
258	July	16	F. A. Grenzeback	Newburgh	Good.
259	July	16	J. A. Joslin	Newburgh	Good.
260	July	16	Dr. H. M. Eddy	Kingston	Good.
294	July	24	N. C. Becker	Amsterdam	Good.
295	July	24	Powell & Gilbert	Amsterdam	Good.

296	July	24	C. W. Striker	Amsterdam	Good.
297	July	24	E. W. Clark	Amsterdam	Good.
298	July	24	G. H. Ingraham	Amsterdam	Good.
299	July	24	Bradford & Lindsay	Amsterdam	Good.
335	July	24	G. Steinführer	Schenectady	Good.
336	July	24	A. T. Veeder & Son	Schenectady	Good.
337	July	24	Edward Rosa	Schenectady	Good.
338	July	24	G. E. Duryea	Schenectady	Good.
339	July	24	Wm. Sauter	Schenectady	Good.
340	July	24	W. T. Hanson & Co	Schenectady	Good.
341	July	24	C. H. Horstmann	Schenectady	Good.
342	July	24	Van Zandt & Rector	Schenectady	Good.
463	August	7	J. B. Williams	Utica	Good.
464	August	7	Wm. Howarth	Utica	Good.
465	August	7	G. L. Hill	Utica	Good.
466	August	7	Wm. Blaikie	Utica	Good.
467	August	7	J. W. Cone	Utica	Good.
468	August	8	Ogden & Downs	Ilion	Good.
469	August	8	E. M. Draper	Ilion	Good.
470	August	8	D. P. Van Court	Mohawk	Good.
471	August	8	C. W. Palmer & Co	Herkimer	Good.
472	August	8	H. G. Babcock & Co	Little Falls	Good.
473	August	8	J. V. Hemstreet	Little Falls	Good.

Antipyrin —(*Phenyl-dimethyl-pyrazolon*).

Fifty-three samples examined, all of good quality, as follows:

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.				
2619	April	27	Albert Clark	Poughkeepsie	Good.
2620	April	27	Strickler & Schwartz	Poughkeepsie	Good.
2621	April	27	Doty & Humphrey	Poughkeepsie	Good.
2650	April	27	J. M. Johnson	Hudson	Good.
2652	April	27	Rice Bros	Hudson	Good.
2717	May	27	Brown & Dawson	Syracuse	Good.
2718	May	27	Chas. Hubbard & Co	Syracuse	Good.
2719	May	27	R. E. Smith	Syracuse	Good.
2720	May	27	Auchampaugh & Hanna	Syracuse	Good.
2721	May	27	W. B. Bissell	Syracuse	Good.
2722	May	27	Smith & Dalton	Syracuse.	Good.
33	July	2	Drake & Moffit	Troy	Good.
34	July	2	E. W. Stoddard	Troy	Good.
35	July	2	Moncrief & Francis	Troy	Good.
36	July	2	G. W. Holcomb	Troy	Good.
37	July	2	C. H. Wiberley	Troy	Good.
38	July	2	C. H. Shacklady	Troy	Good.
239	July	16	I. C. Chapman	Newburgh	Good.
240	July	16	Theo. Merrit	Newburgh	Good.
241	July	16	Geo. Kraft, Jr	Newburgh	Good.
242	July	16	E. R. Post & Co	Newburgh	Good.
243	July	16	L. Y. Wiggins & Son	Newburgh	Good.

244	July	16	David Kingston	Newburgh	Good.
245	July	16	Ira Caldwell	Newburgh	Good.
246	July	16	A. DeW. Jones	Newburgh	Good.
247	July	16	R. Ennis	Newburgh	Good.
248	July	16	F. A. Grenzebach	Newburgh	Good.
249	July	16	David Kingston	Newburgh	Good.
250	July	16	J. A. Joslin	Newburgh	Good.
251	July	16	Dr. H. M. Eddy	Newburgh	Good.
289	July	24	N. C. Becker	Amsterdam	Good.
290	July	24	Powell & Gilbert	Amsterdam	Good.
291	July	24	C. W. Striker	Amsterdam	Good.
292	July	24	E. W. Clark	Amsterdam	Good.
293	July	24	G. H. Ingraham	Amsterdam	Good.
328	July	24	G. Steinführer	Schenectady	Good.
329	July	24	A. T. Veeder & Son	Schenectady	Good.
330	July	24	Edward Rosa	Schenectady	Good.
331	July	24	G. E. Duryea	Schenectady	Good.
332	July	24	William Sauter	Schenectady	Good.
333	July	24	W. T. Hanson & Co	Schenectady	Good.
334	July	24	C. H. Horstmann	Schenectady	Good.
452	August	7	J. B. Williams	Utica	Good.
453	August	7	William Howarth	Utica	Good.
454	August	7	G. L. Hill	Utica	Good.
455	August	7	William Blaikie	Utica	Good.
456	August	7	J. W. Cone	Utica	Good.
457	August	7	E. Steele	Frankfort	Good.
458	August	8	Ogden & Downs	Ilion	Good.
459	August	8	D. P. Van Court	Mokawk	Good.
460	August	8	C. W. Palmer & Co	Herkimer	Good.
461	August	8	H. G. Babcock & Co.	Little Falls	Good.
462	August	8	J. V. Hemstreet	Little Falls	Good.

Brandy — (*Spiritus vini gallici, U. S. P.*).

Three samples examined, of which one was of good, one of fair and one of inferior quality, as follows:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Specific gravity.	Residue.	Quality.
	1891.					
1405	November 12	C. H. Kenyon	Syracuse	0.929	0.166	Good.
1406	November 13	F. W. Thomas.................	Syracuse	0.929	0.418	Fair.
1407	November 13	C. H. Norton.................	Syracuse	0.932	1.35	Inferior.

Purified Chloroform—(*Chloroformum Purificatum, U. S. P.*).

Seventeen samples examined, of which there were of good quality, fifteen; fair, one; and inferior, one. The U. S. P. requires a specific gravity of 1.485—1.490 at 15 degree C. (59 degrees F.). The quality of the purified chloroform now on sale is greatly superior to that formerly upon the market. The following table gives a description of the samples:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Specific gravity at 59 degrees Fahr.	Quality.
	1891.				
1094	October 13	M. H. Dillenbeck	Lyons	1.497	Good.
1095	October 14	W. H. Kelley	Newark	1.488	Good.
1096	October 14	B. H. Davis & Co.	Palmyra.	1.489	Good.
1097	October 16	A. D. Paul & Co	Canandaigua	1.489	Good.
1098	October 17	Pierson & Benham	Canandaigua	1.488	Good.
1099	October 16	A. S. Newman	Canandaigua	1.493	Good.
1100	October 16	E. W. Simmons	Canandaigua	1.490	Good.
1101	October 16	J. A. Barker	Canandaigua	1.488	Good.
1102	October 16	A. L. Sweet	Geneva	1.489	Good.
1103	October 16	Haviland & Hemiup	Geneva	1.501	Good.
1104	October 16	W. H. Partridge	Geneva	1.490	Good.
1105	October 16	J. A. Zobnist	Geneva	1.490	Fair.
1106	October 16	M. Barkman	Geneva	1.491	Good.
1107	October 17	Davis & Casey	Seneca Falls	1.486	Good.
1108	October 17	T. B. Sharp & Sons	Seneca Falls	1.457	Inferior.
1109	October 17	P. Van Kleeck	Seneca Falls	1.489	Good.
1110	October 17	M. E. Lyons	Seneca Falls	1.489	Good.

Compound Spirit of Ether—(*Spiritus Aetheris Compositus U. S. P*).

One hundred and thirty-six samples examined, of which twenty-three were of good quality, while there were of fair quality, eleven, and inferior, 101. One sample consisted of spirit of camphor wrongly sold. Concerning this article, I quote from my last annual report.

"Compound spirit of ether or 'Hoffman's anodyne' is frequently prescribed by physicians and often employed as a household remedy, and while an article of good quality can be procured from responsible manufacturers, or prepared without difficulty by the intelligent and careful pharmacist, the fact is that a spurious article answering to none of the requirements of the Pharmacopoeia is generally sold in its stead, because it is cheaper. Hoffman's anodyne is openly quoted at fifty-two cents a pound in a recent price-list published in a leading pharmaceutical journal, which is about one-quarter the price of the real article. This cheap, spurious and worthless article, obtained as a secondary product in the manufacture of ether, consists chiefly of alcohol, ether and water, with little or none of the ethereal oil upon which the virtue of the preparation largely depends. Dealers may urge that the sale of this spurious article as a household remedy to people who would complain of the price necessarily charged for a genuine article is excusable; but without admitting this as a valid excuse for dispensing a fraudulent and worthless drug, it is evident that its sale in response to a physician's prescription or written order, giving full title and specifying 'U. S. P.,' is entirely inexcusable and unwarranted and equally blameworthy, whether due to ignorance or cupidity. The habit of keeping two qualities of officinal drugs can not be too strongly condemned, but the results of the above examination would seem to show that many dealers, so far as this preparation is concerned, keep only one, and that a spurious article. When officinal preparations are called for they should be furnished by the dealer, or no sale made."

The specific gravity of this preparation is not stated in the Pharmacopoeia, but it should be about 0.796. As made by the process laid down in the Pharmacopoeia of 1870, in which ether, and not stronger ether, was employed and more of the ethereal oil was used, it had a specific gravity of 0.815, but the specific gravity alone is no criterion of quality. The following table gives *particulars* concerning the samples examined:

Number o sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Specific gravity at 59 degrees Fahr.	Quality.
	1891.					
2413	January	14	R. N. Peck	Glens Falls	0.805	Good.
2428	January	14	E. L. Potter	Fort Edward	0.812	Deficient in ethereal oil; inferior.
2429	January	14	Countryman & Wing	Fort Edward	0.802	Deficient in ethereal oil; inferior.
2439	January	14	C. C. Wells	Saratoga	0.828	Deficient in ethereal oil; inferior.
2464	February	20	C. A. Whipple	Troy	0.871	Deficient in ethereal oil; inferior.
2465	February	20	George Holcomb	Troy	0.814	Deficient in ethereal oil; inferior.
2466	February	20	L. Burton & Son	Troy	0.8004	Good.
2467	February	20	C. H. Shacklady	Troy	0.910	Deficient in ethereal oil; inferior.
2468	February	20	Drake & Moffitt	Troy	0.801	Good.
2469	February	20	R. H. Starbuck	Troy	0.878	Deficient in ethereal oil; inferior.
2680	May	27	Charles Hubbard & Co.	Syracuse	0.868	Deficient in ethereal oil; inferior.
2681	May	27	Auchampaugh & Hanna	Syracuse	0.808	Fair.
2682	May	27	W. B. Bissell	Syracuse	0.857	Deficient in ethereal oil; inferior.
2683	May	28	Bibbens & Sherman	Syracuse	0.805	Deficient in ethereal oil; inferior.
2684	May	28	M. G. Spalding	Syracuse	0.842	Deficient in ethereal oil; inferior.
2685	May	28	C. H. Kenyon	Syracuse	0.816	Deficient in ethereal oil; inferior.
2686	May	29	E. B. Covert	Syracuse	0.805	Deficient in ethereal oil; inferior.
2687	May	29	Kenyon, Potter & Co.	Syracuse	0.811	Fair.
2688	May	29	P. L. Ryan & Co.	Syracuse	0.882	Deficient in ethereal oil; inferior.
2689	May	29	Coogan & Quigley	Syracuse	0.839	Deficient in ethereal oil; inferior.
2690	May	29	Smith & Mott	Syracuse	0.798	Fair.
2776	May	29	A. J. Broughton	Rome	0.843	Deficient in ethereal oil; inferior.
2777	May	29	Graves & Reifert	Rome	0.826	Deficient in ethereal oil; inferior.

Compound Spirit of Ether, U. S. P.—(*Continued*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Specific gravity at 59 degrees Fahr.	Quality.
	1891.				
2778	May 29	J. G. Bissell & Co.	Rome	0.818	Fair.
2779	May 29	F. J. Hagan & Co.	Rome	0.816	Deficient in ethereal oil; inferior.
2780	May 29	J. Halsted	Rome	0.856	Deficient in ethereal oil; inferior.
2781	May 29	F. J. Hengge	Rome	0.838	Deficient in ethereal oil; inferior.
236	July 16	A. De W. Jones	Newburgh	0.800	Deficient in ethereal oil; fair.
237	July 16	F. A. Grenzebach	Newburgh	0.813	Deficient in ethereal oil; inferior.
238	July 16	David Kingston	Newburgh	0.854	Deficient in ethereal oil; inferior.
282	July 24	E. W. Clark	Amsterdam	0.806	Deficient in ethereal oil; inferior.
283	July 24	Bradford & Lindsay	Amsterdam	0.821	Deficient in ethereal oil; inferior.
320	July 24	G. E. Duryee	Schenectady	0.802	Good.
383	August 7	E. E. Jones	Utica	0.861	Deficient in ethereal oil; inferior.
384	August 7	Luce & Plumb	Utica	0.866	Deficient in ethereal oil; inferior.
385	August 7	M. E. Knowlson	Utica	0.843	Deficient in ethereal oil; inferior.
386	August 7	Howarth & Ballard	Utica	0.826	Deficient in ethereal oil; inferior.
387	August 7	Sheehan & Kelly	Utica	0.817	Deficient in ethereal oil; inferior.
388	August 7	F. T. Ray & Co.	Utica	0.780	Good.
389	August 7	C. H. Jones	Utica	0.855	Deficient in ethereal oil; inferior.
390	August 7	Kellogg & Cainer	Frankfort	0.883	Deficient in ethereal oil; inferior.
391	August 8	Ogden & Downs	Ilion	0.843	Deficient in ethereal oil; inferior.
392	August 8	J. D. Fitch	Mohawk	0.861	Deficient in ethereal oil; inferior.
393	August 8	C. W. Palmer & Co.	Herkimer	0.838	Deficient in ethereal oil; inferior.
394	August 8	Prowse & Thomson	Herkimer	0.892	Deficient in ethereal oil; inferior.
395	August 8	Amos Woolever	Little Falls	0.816	Deficient in ethereal oil; inferior.

640	September	12	Formel & Co	Saratoga Springs	0.800	Deficient in ethereal oil; inferior.
641	September	12	C. C. Wells	Saratoga Springs	0.798	Good.
642	September	12	C. F. Fish	Saratoga Springs	0.813	Fair.
643	September	12	J. W. Colcord & Co.	Saratoga Springs	0.809	Good.
644	September	12	Walker & Fitchett	Saratoga Springs	0.828	Deficient in ethereal oil; inferior.
645	September	12	Fred. Menges	Saratoga Springs	0.805	Good.
664	September	11	C. S. Callen	Glens Falls	0.813	Deficient in ethereal oil; inferior.
665	September	11	Leggett & Peddie	Glens Falls	0.935	Deficient in ethereal oil; inferior.
666	September	11	Ferris & Viele	Glens Falls	0.801	Good.
667	September	11	H. C. Pearsall	Glens Falls	0.875	Deficient in ethereal oil; inferior.
684	September	11	Flood & Kingsley	Sandy Hill	......	Consists of spirit of camphor; error in sale.
749	September	18	E. G. Purdy	Ballston	0.902	Deficient in ethereal oil; inferior.
750	September	18	W. G. Ball	Ballston	0.814	Deficient in ethereal oil; inferior.
751	September	18	W. J. Redmond & Co.	Ballston	0.843	Deficient in ethereal oil; inferior.
752	September	18	J. H. Westcot	Ballston	0.822	Deficient in ethereal oil; inferior.
753	September	18	F. B. Van Doren & Co.	Mechanicville	0.813	Fair.
754	September	18	C. H. Whitney	Mechanicville	0.837	Deficient in ethereal oil; inferior.
755	September	18	J. Higgins & Co.	Waterford	0.810	Deficient in ethereal oil; inferior.
756	September	18	E. C. McKallor	Waterford	0.881	Deficient in ethereal oil; inferior.
1050	October	13	G. W. Getman	Lyons	0.839	Deficient in ethereal oil; inferior.
1051	October	13	Moore & Moore	Lyons	0.845	Deficient in ethereal oil; inferior.
1052	October	13	G. W. Koester	Lyons	0.800	Fair.
1053	October	14	R. E. Morse & Son	Newark	0.805	Deficient in ethereal oil; inferior.
1054	October	14	N. R. Gardner	Palmyra	0.851	Deficient in ethereal oil; inferior.
1055	October	14	J. W. Rushmore	Palmyra	0.800	Good.
1056	October	15	H. Fellman	Rochester	0.788	Deficient in ethereal oil; inferior.
1057	October	15	Dake Bros	Rochester	0.818	Good.
1058	October	15	W. W. Scott	Rochester	0.838	Deficient in ethereal oil; inferior.
1059	October	15	J. F. Nagle	Rochester	0.800	Deficient in ethereal oil; inferior.
1060	October	15	W. T. McBay	Rochester	0.891	Deficient in ethereal oil; inferior.

Compound Spirit of Ether, U. S. P.—(*Continued*).

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Specific gravity at 59 degrees Fahr.	Quality.
	1891.					
1061	October	15	C. W. MacDonald & Co...	Rochester	0.810	Deficient in ethereal oil; inferior.
1062	October	15	H. B. Guilford............	Rochester	0.816	Deficient in ethereal oil; inferior.
1063	October	15	A. H. Dewey.............	Rochester	0.805	Deficient in ethereal oil; inferior.
1064	October	15	R. M. Cole...............	Rochester	0.841	Deficient in ethereal oil; inferior.
1065	October	15	Czar Dunning............	Rochester	0.879	Deficient in ethereal oil; inferior.
1066	October	15	Dake Bros...............	Rochester	0.804	Deficient in ethereal oil; inferior.
1067	October	15	J. & J. Cooper............	Rochester	0.804	Deficient in ethereal oil; inferior.
1068	October	15	A. R. Mandeville & Co....	Rochester	0.808	Deficient in ethereal oil; inferior.
1069	October	15	Dake Bros...............	Rochester	0.807	Deficient in ethereal oil; inferior.
1070	October	15	Hyde & Page............	Rochester	0.837	Deficient in ethereal oil; inferior.
1071	October	15	Ballard & Hurlburt........	Rochester	0.830	Deficient in ethereal oil; inferior.
1072	October	15	Paine Drug Co...........	Rochester	0.844	Deficient in ethereal oil; inferior.
1073	October	15	Curran & Goler...........	Rochester	0.805	Good.
1074	October	15	O. J. & J. A. Bryan.......	Rochester	0.805	Deficient in ethereal oil; inferior.
1075	October	15	A. B. Chamberlain........	Rochester	0.804	Good.
1076	October	15	R. J. Strasenburgh........	Rochester	0.809	Good.
1077	October	16	Genesee Pharmacy........	Rochester	0.808	Deficient in ethereal oil; inferior.
1078	October	16	P. G. Siener..............	Rochester	0.807	Deficient in ethereal oil; inferior.
1079	October	16	E. A. Cowley.............	Rochester	0.841	Deficient in ethereal oil; inferior.
1080	October	16	G. Hahn.................	Rochester	0.826	Deficient in ethereal oil; inferior.
1081	October	16	S. A. Merriam............	Rochester	0.853	Deficient in ethereal oil; inferior.
1082	October	16	J. C. Lung...............	Rochester	0.850	Deficient in ethereal oil; inferior.
1083	October	16	Craig & Stewart..........	Rochester	0.848	Deficient in ethereal oil; inferior.

1084	October	16	R. W. Chambers & Co....	Rochester	0·807	Good.
1085	October	17	M. E. Lyons	Seneca Falls.....	0.825	Deficient in ethereal oil; inferior.
1086	October	17	H. L. Adams.............	Auburn	0.813	Deficient in ethereal oil; inferior.
1087	October	17	C. H. Sagar Co...........	Auburn	0.797	Good.
1088	October	17	J. L. Elliott..............	Auburn	0.883	Deficient in ethereal oil; inferior.
1089	October	17	A. H. Hamilton	Auburn	0.804	Fair.
1090	October	17	H. G. Hudson............	Auburn	0.829	Deficient in ethereal oil; inferior.
1091	October	17	L. Hunt	Auburn	0.798	Good.
1092	October	17	C. B. Sears...............	Auburn	0.803	Good.
1093	October	17	M. L. Walley & Co	Auburn	0.807	Fair.
1222	November	10	W. B. Bissell............	Syracuse	0.861	Deficient in ethereal oil; inferior.
1223	November	10	Auchampaugh & Hanna...	Syracuse	0.813	Good.
1224	November	10	R. E. Smith..............	Syracuse	0.803	Good.
1225	November	10	Brown & Dawson	Syracuse	0.813	Fair.
1226	November	10	J. H. Kemter............	Syracuse	0.812	Deficient in ethereal oil; inferior.
1227	November	10	G. W. Holloway..........	Syracuse	0.893	Deficient in ethereal oil; inferior.
1228	November	10	S. D. Devoe..............	Syracuse	0.856	Deficient in ethereal oil; inferior.
1229	November	10	O. P. Barnum............	Syracuse	0.871	Deficient in ethereal oil; inferior.
1230	November	10	Smith & Dalton..........	Syracuse	0.872	Deficient in ethereal oil; inferior.
1231	November	10	P. L. Ryan & Co.........	Syracuse	0.888	Deficient in ethereal oil; inferior.
1232	November	11	E. B. Covert	Syracuse	0.814	Deficient in ethereal oil; inferior.
1233	November	11	Kenyon, Potter & Co......	Syracuse	0.808	Good.
1234	November	11	J. C. Bowe & Co	Syracuse	0.873	Deficient in ethereal oil; inferior.
1235	November	11	Coogan & Quigley........	Syracuse	0.842	Deficient in ethereal oil; inferior.
1236	November	11	M. G. Spalding...........	Syracuse	0.844	Deficient in ethereal oil; inferior.
1237	November	11	Newton & Hickock........	Syracuse	0.805	Deficient in ethereal oil; inferior.
1238	November	11	Smith & Mott............	Syracuse	0.839	Deficient in ethereal oil; inferior.
1239	November	12	Taylor & Treat...........	Syracuse	0.865	Deficient in ethereal oil: inferior.
1240	November	12	W. D. Tallman...........	Syracuse	0.814	Good.
1241	November	12	W. B. Fuller.............	Syracuse	0.799	Good.
1242	November	12	R. Bodden...............	Syracuse	0.806	Deficient in ethereal oil; inferior.

Compound Spirit of Ether, U. S. P.— (*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Specific gravity at 59 degrees Fahr.	Quality.
	1891.				
1243	November 12	W. Derby	Syracuse	0.869	Deficient in ethereal oil; inferior.
1244	November 12	J. W. Cummings	Syracuse	0.849	Deficient in ethereal oil: inferior.
1245	November 12	F. E. Champlin & Co	Syracuse	0.865	Deficient in ethereal oil; inferior.
1246	November 13	William Muench	Syracuse	0.805	Deficient in ethereal oil; inferior.
1247	November 13	Charles Hubbard & Co	Syracuse	0.867	Deficient in ethereal oil; inferior.
1248	November 13	E. W. Thomas	Syracuse	0.805	Deficient in ethereal oil; inferior.
1249	November 13	C. H. Norton	Syracuse	0.842	Deficient in ethereal oil; inferior.

Spirit of Nitrous Ether—(*Spiritus Aetheris Nitrosi, U. S. P.*).

The present U. S. P. process, as previously stated, yields a product containing less than 2.83 per cent of real ethyl nitrite, although four per cent is claimed for it. Concerning this article I quote from last year's report: "In rating the samples examined, therefore, since it would be unfair to demand a better product than the prescribed process can yield, samples containing 2.50 to 7.00 per cent have been classed as of 'good quality,' and those giving over seven per cent, and a few such were encountered, being probably made from the so-called 'concentrated nitre,' and employing too little alcohol in its dilution, have been classed as of 'excessive strength.' Samples yielding from two to 2.49 per cent have been classed as of 'fair,' and those falling below two per cent as of 'inferior quality.' Two hundred and eighty-eight samples were examined, of which 110 were of good quality; twenty-four were of fair quality; four of excessive strength, and the remaining 150 samples were of inferior quality, many of them containing but a bare trace of the ethyl nitrite upon which the value of the preparation depends." These results are more satisfactory than those obtained last year, when less than one-fifth of the samples examined were found to be of a good quality, but it is by no means a good showing. As remarked last year, it "is not denied that the manufacture of this article is troublesome, nor that the preparation is one which must be well kept and carefully dispensed, since it unquestionably deteriorates by age and exposure. Nevertheless, an article which would be classed as good by the standard we have adopted, as above described, can be purchased in the market or prepared by the intelligent and careful pharmacist, and the sale of an inferior or decomposed article is entirely inexcusable and may generally be attributed either to the purchase of the cheapest obtainable goods or to gross carelessness either in the preparation or preservation of the article in question." A list of the samples examined is appended:

Spirit of Nitrous Ether, U. S. P. — (*Continued*).

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Per cent ethyl nitrite.	Quality.
	1891.					
2540	March	17	D. H. F. Drug Co.	Albany	3.05	Good.
2541	March	17	T. W. Nellis	Albany	1.11	Inferior.
2542	March	17	D. H. Fonda Drug Co.	Albany	5.61	Good.
2543	March	17	A. B. Huested & Co.	Albany	4.30	Good.
2544	March	19	A. R. Miller	Albany	4.73	Good.
2545	March	17	Arch. Gilbert	Albany	1.66	Inferior.
2546	March	17	Howard Miller	Albany	0.65	Inferior.
2547	March	17	C. E. Lloyd	Albany	3.60	Good.
2548	March	17	H. Pareira & Co	Albany	1.45	Inferior.
2564	March	19	F. W. Hoffman	Albany	0.23	Inferior.
2565	March	19	J. DeP. Townsend	Albany	0.45	Inferior.
2566	March	19	F. J. Smith	Albany	0.60	Inferior.
2567	March	19	Frank Richardson	Albany	2.20	Fair.
2568	March	19	Chas. Shaefer	Albany	4.50	Good.
2569	March	19	W. B. Sabey	Albany	1.78	Inferior.
2570	March	19	C. H. Gaus	Albany	1.58	Inferior.
2571	March	19	Wm. Palmatier	Albany	1.55	Inferior.
2579	March	27	J. H. McIntyre	East Albany	0.08	Inferior.
2580	March	27	J. F. Munger	East Albany	0.63	Inferior.
2581	March	27	P. Donnelly	East Albany	0.53	Inferior.
2582	March	27	Cody's Pharmacy	East Albany	0.87	Inferior.
2583	March	27	H. E. Melius	Bath	0.65	Inferior.
2584	March	27	Wm. Herrington	Greenbush	0.93	Inferior.
2585	March	27	J. H. Miller	Greenbush	0.40	Inferior.

2590	March	27	G. E. Ferguson	Albany	1.63	Inferior.
2591	March	27	A. L. George	Albany	2.70	Good.
2592	March	28	T. E. Walsh	Albany	5.40	Good.
2593	March	28	M. McHarg, M. D	Albany	2.31	Good.
2594	March	28	E. F. Hunting	Albany	2.01	Good.
2595	March	28	Dr. W. L. Purple	Albany	1.57	Inferior.
2596	March	28	C. H. Smith & Co	Albany	1.50	Inferior.
2605	April	27	Albert Clark	Poughkeepsie	4.50	Good.
2606	April	27	J. V. Humphrey	Poughkeepsie	1.20	Inferior.
2607	April	27	C. S. Bowne	Poughkeepsie	2.00	Fair.
2608	April	27	E. C. Bolton	Poughkeepsie	0.23	Inferior.
2609	April	27	Strickler & Schwartz	Poughkeepsie	1.65	Inferior.
2610	April	27	Wood & Tittamer	Poughkeepsie	3.90	Good.
2611	April	27	Doty & Humphrey	Poughkeepsie	Trace.	Inferior.
2612	April	27	C. Westervelt	Poughkeepsie	3.03	Good.
2613	April	27	Simpson, Roberts & Co	Poughkeepsie	0.98	Inferior.
2614	April	27	A. A. & J. W. Goetchus	Poughkeepsie	0.48	Inferior.
2615	April	27	W. F. Turner	Poughkeepsie	Trace.	Inferior.
2629	April	27	W. J. Miller	Hudson	None.	Inferior.
2630	April	27	Herbert Best	Hudson	4.50	Good.
2631	April	27	Rossman & McKinstry	Hudson	1.20	Inferior.
2632	April	27	Van Tassel & Tobey	Hudson	4.88	Good.
2633	April	27	J. M. Johnson	Hudson	0.60	Inferior.
2634	April	27	Rice Bros	Hudson	5.58	Good.
2635	April	27	Byron Stedman	Hudson	4.20	Good.
2636	April	27	Wardle & Son	Hudson	0.38	Inferior.
2654	May	27	Brown & Dawson	Syracuse	4.35	Good.
2655	May	27	Chas. Hubbard & Co	Syracuse	0.35	Inferior.
2656	May	27	R. E. Smith	Syracuse	1.43	Inferior.
2657	May	27	Auchampaugh & Hanna	Syracuse	3.20	Good.
2658	May	27	W. B. Bissell	Syracuse	4.20	Good.

Spirit of Nitrous Ether, U. S. P. — (*Continued*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent ethyl nitrite.	Quality.
	1891.				
2659	May 27	J. C. Bowe	Syracuse	0.68	Inferior.
2660	May 27	Coogan & Quigley	Syracuse	Trace.	Inferior.
2661	May 27	P. L. Ryan & Co	Syracuse	0.38	Inferior.
2662	May 27	Smith & Dalton	Syracuse	0.50	Inferior.
2663	May 28	Kenyon, Potter & Co	Syracuse	1.85	Inferior.
2664	May 28	G. A. Heyne	Syracuse	3.23	Good.
2665	May 28	Wm. Muench	Syracuse	1.71	Inferior.
2666	May 28	S. D. Devoe	Syracuse	2.13	Fair.
2667	May 28	O. P. Barnum	Syracuse	3.65	Good.
2668	May 28	E. B. Covert	Syracuse	0.15	Inferior.
2669	May 28	D. Derby	Syracuse	3.72	Good.
2670	May 28	H. E. Richardson	Syracuse	0.18	Inferior.
2671	May 28	Bibbens & Sherman	Syracuse	1.73	Inferior.
2672	May 28	Newton & Hickock	Syracuse	0.38	Inferior.
2673	May 28	Smith & Mott	Syracuse	0.15	Inferior.
2674	May 28	E. W. Thomas	Syracuse	0.15	Inferior.
2675	May 28	W. B. Fuller	Syracuse	0.65	Inferior.
2676	May 28	W. D. Tallman	Syracuse	0.38	Inferior.
2677	May 28	F. C. Joslyn & Co	Syracuse	0.20	Inferior.
2678	May 28	M. G. Spalding	Syracuse	Trace.	Inferior.
2679	May 28	J. J. Taylor	Syracuse	0.48	Inferior.
2756	May 29	A. J. Broughton	Rome	4.35	Good.
2757	May 29	Graves & Reifert	Rome	0.21	Inferior.

2758	May	29	F. M. Hamlin	Rome	0.30	Inferior.
2759	May	29	J. G. Bissell & Co.	Rome	0.20	Inferior.
2760	May	29	F. J. Hagar & Co.	Rome	Trace.	Inferior.
2761	May	29	J. Halstead	Rome	2.60	Good.
2762	May	29	F. J. Hengge	Rome	4.58	Good.
206	July	16	I. C. Chapman	Newburgh	3.09	Good.
207	July	16	Theo. Merritt	Newburgh	0.21	Inferior.
208	July	16	George Kraft, Jr	Newburgh	0.97	Inferior.
209	July	16	E. R. Post & Co.	Newburgh	0.75	Inferior.
210	July	16	L. G. Wiggins & Son	Newburgh	1.95	Inferior.
211	July	16	David Kingston	Newburgh	0.93	Inferior.
212	July	16	R. Caldwell	Newburgh	1.08	Inferior.
213	July	16	R. Ennis	Newburgh	3.96	Good.
214	July	16	F. Grenzebach	Newburgh	2.34	Good.
215	July	16	David Kingston	Newburgh	Trace.	Inferior.
216	July	16	J. Joslin	Newburgh	4.20	Good.
217	July	16	Dr. H. M. Eddy	Kingston	4.65	Good.
277	July	24	N. C. Becker	Amsterdam	0.88	Inferior.
278	July	24	Powell & Gilbert	Amsterdam	0.45	Inferior.
279	July	24	C. W. Striker	Amsterdam	1.08	Inferior.
280	July	24	E. W. Clark	Amsterdam	Trace.	Inferior.
281	July	24	G H. Ingraham	Amsterdam	1.84	Inferior.
313	July	24	G. Steinführer	Schenectady	0.84	Inferior.
314	July	24	A. T. Veeder & Son	Schenectady	4.65	Good.
315	July	24	Edward Rosa	Schenectady	2.14	Fair.
316	July	24	G. E. Duryee	Schenectady	3.68	Good.
317	July	24	Wm. Sauter	Schenectady	4.50	Good.
318	July	24	W. T. Hanson & Co.	Schenectady	1.80	Inferior.
319	July	24	C. H. Horstmann	Schenectady	0.66	Inferior.
360	August	7	J. B. Williams	Utica	7.38	Excessive strength.
361	August	7	Wm. Howarth	Utica	4.58	Good.

Spirit of Nitrous Ether, U. S. P.—(*Continued*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent ethyl nitrite.	Quality.
	1891.				
362	August 7	E. E. Jones	Utica	Trace.	Inferior.
363	August 7	G. L. Hill	Utica	3.81	Good.
364	August 7	Wm. Blaikie	Utica	3.63	Good.
365	August 7	J. W. Cone	Utica	0.13	Inferior.
366	August 7	M. E. Knowlson	Utica	2.89	Good.
367	August 7	Howarth & Ballard	Utica	4.86	Good.
368	August 7	Sheehan & Kelly	Utica	0.57	Inferior.
369	August 7	F. T. Ray & Co.	Utica	0.21	Inferior.
370	August 7	C. H. Jones	Utica	3.60	Good.
371	August 7	E. Steele	Frankfort	3.16	Good.
372	August 7	Kellogg & Carrier	Frankfort	2.00	Fair.
373	August 8	Ogden & Downs	Ilion	3.93	Good.
374	August 8	E. M. Draper	Ilion	0.90	Inferior.
375	August 8	J. D. Fitch	Mohawk	0.34	Inferior.
376	August 8	D. P. Van Court	Mohawk	1.48	Inferior.
377	August 8	C. W. Palmer & Co	Herkimer	4.95	Good.
378	August 8	E. W. Sluyter	Herkimer	2.64	Good.
379	August 8	Prowse & Thomson	Herkimer	3.49	Good.
380	August 8	H. G. Babcock & Co	Little Falls	0.18	Inferior.
381	August 8	J. H. Smith	Little Falls	0.25	Inferior.
382	August 8	J. V. Hemstreet	Little Falls	1.56	Inferior.
634	September 12	Formel & Co	Saratoga Springs	7.50	Excessive strength.
635	September 12	C. C. Wells	Saratoga Springs	0.41	Inferior.

636	September	12	C. F. Fish	Saratoga Springs	4.30	Good.
637	September	12	J. M. Colcord & Co.	Saratoga Springs	3.39	Good.
638	September	12	Walker & Fitchett	Saratoga Springs	1.23	Inferior.
639	September	12	Fred. Menges	Saratoga Springs	4.12	Good.
659	September	11	C. P. Callen	Glens Falls	0.49	Inferior.
660	September	11	Ames & Baldwin	Glens Falls	3.67	Good.
661	September	11	Leggett & Peddie	Glens Falls	Trace.	Inferior.
662	September	11	Ferris & Viele	Glens Falls	3.14	Good.
663	September	11	H. C. Pearsall	Glens Falls	0.95	Inferior.
677	September	11	Smalley & Co.	Sandy Hill	1.32	Inferior.
678	September	11	Flood & Kingsley	Sandy Hill	2.23	Fair.
679	September	12	F. B. Davis	Fort Edward	2.67	Good.
680	September	12	Countryman & Wing	Fort Edward	2.19	Fair.
681	September	12	E. L. Potter	Fort Edward	4.92	Good.
741	September	18	E. G. Purdy	Ballston	1.66	Inferior.
742	September	18	W. G. Ball	Ballston	3.21	Good.
743	September	18	F. E. Mitchell	Ballston	0.93	Inferior.
744	September	18	W. J. Redmond & Co.	Ballston	0.96	Inferior.
745	September	18	J. H. Westcot	Ballston	3.36	Good.
746	September	18	F. B. Van Doren & Co.	Mechanicville	2.00	Fair.
747	September	18	C. H. Whitney	Mechanicville	1.09	Inferior.
748	September	18	J. Higgins & Co.	Waterford	3.10	Good.
997	October	13	G. W. Getman	Lyons	2.76	Good.
998	October	13	Moore & Moore	Lyons	2.73	Good.
999	October	13	G. W. Koester	Lyons	4.18	Good.
1000	October	14	R. E. Morse & Son	Newark	Trace.	Inferior.
1001	October	14	M. W. Palmer	Newark	3.76	Good.
1002	October	14	N. R. Gardner	Palmyra	4.96	Good.
1003	October	14	J. W. Rushmore	Palmyra	3.27	Good.
1004	October	15	H. Fellman	Rochester	2.41	Fair.
1005	October	15	W. W. Steele	Rochester	3.13	Good.

Spirit of Nitrous Ether, U. S. P. — (*Continued*).

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Per cent ethyl nitrite.	Quality.
	1891.					
1006	October	15	G. W. Howell & Son	Rochester	2.25	Fair.
1007	October	15	Dake Bros.	Rochester	3.51	Good.
1008	October	15	W. W. Scott	Rochester	3.26	Good.
1009	October	15	J. F. Nagle	Rochester	3.65	Good.
1010	October	15	W. T. McBay	Rochester	3.81	Good.
1011	October	15	C. W. MacDonald & Co	Rochester	1.56	Inferior.
1012	October	15	H. B. Guilford	Rochester	5.45	Good.
1013	October	15	A. H. Dewey	Rochester	0.69	Inferior.
1014	October	15	R. M. Cole	Rochester	1.26	Inferior.
1015	October	15	Czar Dunning	Rochester	4.89	Good.
1016	October	15	Dake Bros.	Rochester	3.74	Good.
1017	October	15	J. & J. Cooper	Rochester	2.72	Good.
1018	October	15	A. R. Mandeville	Rochester	4.56	Good.
1019	October	15	Dake Bros.	Rochester	3.52	Good.
1020	October	15	Hyde & Page	Rochester	0.88	Inferior.
1021	October	15	Ballard & Hurlburt	Rochester	3.00	Good.
1022	October	15	J. H. Haass	Rochester	4.99	Good.
1023	October	15	Paine Drug Co	Rochester	1.18	Inferior.
1024	October	15	Curran & Goler	Rochester	0.28	Inferior.
1025	October	15	O. J. & J. A. Bryan	Rochester	4.23	Good.
1026	October	15	A. B. Chamberlain	Rochester	2.77	Good.
1027	October	15	R. J. Strasenburgh	Rochester	2.42	Fair.
1028	October	16	Genesee Pharmacy	Rochester	0.78	Inferior.

1029	October	16	P. G. Siener	Rochester	1.44	Inferior.
1030	October	16	E. A. Cowley	Rochester	3.62	Good.
1031	October	16	G. Hahn	Rochester	2.43	Fair.
1032	October	16	S. A. Merriam	Rochester	1.04	Inferior.
1033	October	16	R. Kimpton	Rochester	0.54	Inferior.
1034	October	16	J. C. Lung	Rochester	0.48	Inferior.
1035	October	16	Craig & Stewart	Rochester	3.42	Good.
1036	October	16	M. Barkman	Geneva	7.00	Excessive strength.
1037	October	17	M. E. Lyons	Seneca Falls	Trace.	Inferior.
1038	October	17	H. L. Adams	Auburn	0.30	Inferior.
1039	October	17	C. H. Sagar Co.	Auburn	Trace.	Inferior.
1040	October	17	J. L. Elliott	Auburn	3.92	Good.
1041	October	17	A. H. Hamilton	Auburn	2.78	Good.
1042	October	17	H. G. Hudson	Auburn	2.43	Fair.
1043	October	17	L. Hunt	Auburn	1.02	Inferior.
1044	October	17	C. B. Sears	Auburn	1.07	Inferior.
1045	October	17	M. L. Walley & Co.	Auburn	0.53	Inferior.
1191	November	10	W. B. Bissell	Syracuse	3.96	Good.
1192	November	10	Auchampaugh & Hanna	Syracuse	3.33	Good.
1193	November	10	R. E. Smith	Syracuse	2.97	Good.
1194	November	10	Brown & Dawson	Syracuse	3.70	Good.
1195	November	10	T. H. Kemter	Syracuse	0.60	Inferior.
1196	November	10	O. Heyne	Syracuse	None.	Inferior.
1197	November	10	G. W. Holloway	Syracuse	None.	Inferior.
1198	November	10	S. D. Devoe	Syracuse	2.95	Good.
1199	November	10	O. P. Barnum	Syracuse	3.24	Good.
1200	November	10	Smith & Dalton	Syracuse	4.02	Good.
1201	November	10	P. L. Ryan & Co.	Syracuse	4.33	Good.
1202	November	11	E. B. Covert	Syracuse	1.55	Inferior.
1203	November	11	Kenyon, Potter & Co.	Syracuse	2.21	Fair.
1204	November	11	J. C. Bowe & Co.	Syracuse	6.06	Good.

Spirit of Nitrous Ether, U. S. P. — (*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent ethyl nitrite.	Quality.
	1891.				
1205	November 11	Coogan & Quigley	Syracuse	5.10	Good.
1206	November 11	M. G. Spalding	Syracuse	None.	Inferior.
1207	November 11	Newton & Hickock	Syracuse	3.84	Good.
1208	November 12	Taylor & Treat	Syracuse	3.78	Good.
1209	November 12	C. H. Kenyon	Syracuse	None.	Inferior.
1210	November 12	W. D. Tallman	Syracuse	0.25	Inferior.
1211	November 12	W. B. Fuller	Syracuse	0.36	Inferior.
1212	November 12	J. C. Joslyn & Co	Syracuse	4.49	Good.
1213	November 12	R. Bodden	Syracuse	3.90	Good.
1214	November 12	D. Derby	Syracuse	4.53	Good.
1215	November 12	J. M. Cummings	Syracuse	1.14	Inferior.
1216	November 12	F. E. Champlin & Co	Syracuse	4.25	Good.
1217	November 13	Wm. Muench	Syracuse	5.04	Good.
1218	November 13	G. A. Heyne	Syracuse	0.92	Inferior.
1219	November 13	Chas. Hubbard & Co	Syracuse	2.88	Good.
1220	November 13	E. W. Thomas	Syracuse	5.78	Good.
1221	November 13	C. H. Norton	Syracuse	4.41	Good.

Stronger Ether — (*Aether Fortior*, *U. S. P.*).

Sixty-one samples examined, of which there were of good quality, thirty-eight; inferior, nineteen; and fair, four.

Two qualities of ether are recognized by the U. S. P., viz., "ether," specific gravity about 0.750, and containing about twenty-six per cent of alcohol, and "stronger ether," with a specific gravity not higher than 0.725, at fifteen degrees C., and containing about six per cent of alcohol. The term "sulphuric ether" is not recognized in the Pharmacopeia. Stronger ether is generally used as an anaesthetic, and ought always to be kept in stock by the pharmacist. When it is called for by its officinal name in full it ought always be supplied, and the substitution of common ether or the so-called "wash ether" of the trade is entirely inexcusable, and betokens great carelessness or ignorance on the part of the seller. Particulars concerning these samples are appended:

Stronger Ether, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Specific gravity at 59 degrees Fahr.	Quality.
	1891.				
272	July 24	N. C. Becker	Amsterdam	0.726	Good.
273	July 24	Powell & Gilbert	Amsterdam	0.745	Inferior.
274	July 24	C. W. Striker	Amsterdam	0.725	Good.
275	July 24	G. H. Ingraham	Amsterdam	0.724	Good.
276	July 24	Bradford & Lindsay	Amsterdam	0.727	Good.
306	July 24	G. Steinführer	Schenectady	0.727	Good.
307	July 24	A. T. Veeder & Son	Schenectady	0.731	Fair.
308	July 24	Edward Rosa	Schenectady	0.743	Inferior.
309	July 24	Wm. Sauter	Schenectady	0.735	Inferior.
310	July 24	W. T. Hanson & Co.	Schenectady	0.725	Good.
311	July 24	C. H. Horstmann	Schenectady	0.726	Good.
312	July 24	Van Zandt & Rector	Schenectady	0.727	Good.
351	August 7	J. B. Williams	Utica	0.750	Inferior.
352	August 7	Wm. Howarth	Utica	0.724	Good.
353	August 7	G. L. Hill	Utica	0.725	Good.
354	August 7	Wm. Blaikie	Utica	0.726	Good.
355	August 7	J. W. Cone	Utica	0.725	Good.
356	August 7	Ogden & Downs	Ilion	0.725	Good.
357	August 7	D. P. Van Court	Mohawk	0.726	Good.
358	August 7	J. H. Smith	Little Falls	0.757	Inferior.
359	August 7	J. V. Hemstreet	Little Falls	0.725	Good.
630	September 12	Formel & Co.	Saratoga Springs	0.725	Good.
631	September 12	C. C. Wells	Saratoga Springs	0.728	Good.

632	September	12	C. F. Fish	Saratoga Springs	0.725	Good.
633	September	12	Fred. Menges	Saratoga Springs	0.725	Good.
656	September	11	Ames & Baldwin	Glens Falls	0.726	Good.
657	September	11	Leggett & Peddie	Glens Falls	0.726	Good.
658	September	11	Ferris & Viele	Glens Falls	0.725	Good.
673	September	11	Smalley & Co.	Sandy Hill	0.727	Good.
674	September	11	Flood & Kingsley	Sandy Hill	0.726	Good.
675	September	12	Countryman & Wing	Fort Edward	0.726	Good.
676	September	12	E. L. Potter	Fort Edward	0 727	Good.
735	September	18	E. G. Purdy	Ballston	0.762	Inferior.
736	September	18	W. G. Ball	Ballston	0.739	Inferior.
737	September	18	F. E. Mitchell	Ballston	0.730	Fair.
738	September	18	W. J. Redmond & Co.	Ballston	0.725	Good.
739	September	18	F. B. Van Doren & Co.	Mechanicville	0.725	Good.
740	September	18	J. Higgins & Co	Waterford	0.744	Inferior.
1046	October	16	Pierson & Benham	Canandaigua	0.733	Inferior.
1047	October	16	A. S. Newman	Canandaigua	0.735	Inferior.
1048	October	16	E. W. Simmons	Canandaigua	0.725	Good.
1049	October	16	A. L. Sweet	Geneva	0.765	Inferior.
1250	November	10	W. B. Bissell	Syracuse	0.752	Inferior.
1251	November	10	R. E. Smith	Syracuse	0.725	Good.
1252	November	10	T. H. Kemter	Syracuse	0.743	Inferior.
1253	November	10	O. Heyne	Syracuse	0.751	Inferior.
1254	November	10	G. W. Holloway	Syracuse	0.730	Fair.
1255	November	10	S. E. Devoe	Syracuse	0.765	Inferior.
1256	November	10	Smith & Dalton	Syracuse	0.767	Inferior.
1257	November	10	P. L. Ryan & Co	Syracuse	0.725	Good.
1258	November	11	E. B. Covert	Syracuse	0.742	Inferior.
1259	November	11	J. C. Bowe & Co.	Syracuse	0.725	Good.
1260	November	11	M. G. Spaulding	Syracuse	0.730	Fair.
1261	November	11	Newton & Hickock	Syracuse	0.725	Good.

Stronger Ether, U. S. P.—(*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Specific gravity at 59 degrees Fahr.	Quality.
	1891.				
1262	November 11	Smith & Mott	Syracuse	0.725	Good.
1263	November 12	W. D. Tallman	Syracuse	0.762	Inferior.
1264	November 12	W. B. Fuller	Syracuse	0.725	Good.
1265	November 12	F. C. Joslyn & Co	Syracuse	0.725	Good.
1266	November 12	R. Bodden	Syracuse	0.725	Good.
1267	November 12	J. M. Cummings	Syracuse	0.755	Inferior.
1268	November 13	C. H. Norton	Syracuse	0.725	Good.

Diluted Hydrobromic Acid—(*Acidum Hydrobromicum Dilutum, U. S. P.*).

Fifty samples examined, of which there were of good quality, thirty-three; fair, three; inferior, three; excessive strength, seven, and one consisted of diluted hydrochloric acid and one was apparently nothing but water. The Pharmacopœia requires ten per cent of the absolute acid and the same for diluted hydrochloric and nitric acids. In the case of diluted sulphuric acid ten per cent of the officinal sulphuric acid is required. In rating these acids those containing from nine to 12.5 per cent have been classed as good; 7.5 to 8.9, fair; below 7.5 inferior, and over 12.5 excessive strength. A list of the samples and their percentage strength is appended.

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
	1891.					
2414	January	14	H. C. Pearsall	Glens Falls	12.0	Good.
2415	January	14	Ames & Baldwin	Glens Falls	11.0	Good.
2440	January	14	C. F. Fish	Saratoga	10.2	Good.
2441	January	14	J. M. Colcord & Co	Saratoga	12.5	Good.
2442	January	14	Walker & Fitchett	Saratoga	12.5	Good.
2443	January	14	Fred Menges	Saratoga	12.0	Good.
2616	April	27	Strickler & Schwartz	Poughkeepsie	10.6	Good.
2617	April	27	Wood & Tittamer	Poughkeepsie	10.8	Good.
2618	April	27	A. A. & J. W. Goetchus	Poughkeepsie	10.2	Good.
2694	May	28	G. A. Heyne	Syracuse	13.6	Excessive strength.
2695	May	28	Wm. Muench	Syracuse	12.4	Good.
2696	May	28	S. D. Devoe	Syracuse	10.8	Good.
2697	May	28	E. B. Covert	Syracuse	15.2	Excessive strength.

Diluted Hydrobromic Acid, U. S. P. — (*Concluded*).

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
	1891.					
2698	May	28	H. E. Richardson	Syracuse	10.1	Diluted hydrochloric acid; error in sale.
2699	May	28	Newton & Hickock	Syracuse	12.5	Good.
2700	May	28	E. W. Thomas	Syracuse	14.8	Excessive strength.
2763	May	29	A. J. Broughton	Rome	12.3	Good.
2765	May	29	J. G. Bissell & Co	Rome	12.4	Good.
2766	May	29	F. J. Hagar & Co	Rome	3.2	Inferior.
2767	May	29	J. Halstead	Rome	21.2	Excessive strength.
2768	May	29	F. J. Hengge	Rome	3.4	Inferior.
1	July	2	A. M. Knowlson	Troy	8.4	Fair.
2	July	2	J. M. Donnelly	Troy	8.2	Consists of diluted hydrochloric acid; error in sale.
225	July	16	I. C. Chapman	Newburgh	10.4	Good.
226	July	16	Geo. Kraft, Jr	Newburgh	10.1	Good.
227	July	16	E. R. Post & Co	Newburgh	9.7	Good.
228	July	16	L. G. Wiggins & Son	Newburgh	9.7	Good.
229	July	16	J. A. Joslin	Newburgh	12.0	Good.
287	July	24	G. H. Ingraham	Amsterdam	16.4	Excessive strength.
650	September	12	Formel & Co	Saratoga	4.4	Inferior.
651	September	12	C. C. Wells	Saratoga	10.8	Good.

652	September	12	C. F. Fish	Saratoga	10.2	Good.
653	September	12	J. M. Colcord & Co	Saratoga	6.2	Consists of diluted hydrochloric acid; error in sale.
654	September	12	Walker & Fitchett	Saratoga	12.5	Good.
655	September	12	Fred Menges	Saratoga	0.0	Apparently water only; no acidity.
671	September	11	Ferris & Viele	Glens Falls	9.2	Good.
672	September	11	H. C. Pearsall	Glens Falls	13.4	Excessive strength.
683	September	11	Smalley & Co	Sandy Hill	11.9	Good.
1136	October	13	Moore & Moore	Lyons	12.5	Good.
1137	October	15	Dake Bros	Rochester	12.3	Good.
1138	October	15	J. & J. Cooper	Rochester	11.8	Good.
1139	October	15	Dake Bros	Rochester	11.7	Good.
1140	October	15	Ballard & Hurlburt	Rochester	9.7	Fair; contains some free iodine.
1141	October	15	G. H. Haass	Rochester	9.99	Good.
1142	October	15	Paine Drug Co	Rochester	9.9	Good.
1143	October	15	Curran & Goler	Rochester	13.2	Excessive strength.
1144	October	15	O. J. & J. A. Bryan	Rochester	12.5	Good.
1145	October	17	C. H. Sagar Co	Auburn	11.1	Good.
1146	October	17	C. B. Sears	Auburn	10.3	Good.
1147	October	17	M. L. Walley & Co.	Auburn	7.4	Fair.

Diluted Hydrochloric Acid — (*Acidum Hydrochloricum Dilutum, U. S. P.*).

Twenty-six samples examined, of which twenty-one were of good quality; three were fair and two of inferior quality. The Pharmacopœia requires ten per cent of the absolute acid. For standard employed in rating these samples see under diluted hydrobromic acid. The samples are described in the following table:

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
	1891.					
2422	January	14	Flood & Kingsley	Sandy Hill	9.5	Good.
2470	February	20	W. H. Flandran	Troy	10.4	Good.
2471	February	20	D. F. Magill	Troy	9.3	Good.
2472	February	20	Cavanaugh & Perkins	Troy	6.7	Inferior.
2473	February	20	Henry Schneider	Troy	9.0	Good.
2474	February	20	E. W. Stoddard	Troy	11.1	Good.
2475	February	20	F. W. Brower	Troy	7.7	Fair.
2476	February	20	Moncrief & Francis	Troy	11.0	Contains iron and sulphuric acid; inferior.
2477	February	20	C. H. Bosworth	Troy	9.7	Good.
2478	February	20	J. M. Donnelly	Troy	8.6	Fair.
2479	February	20	Drake & Moffitt	Troy	12.5	Good.
2480	February	20	R. H. Starbuck	Troy	9.4	Good.
2481	February	20	A. M. Knowlson	Troy	9.8	Good.
2482	February	20	H. Gnadendorff	Troy	10.3	Good.
2483	February	20	C. H. Weberley	Troy	10.3	Good.
2501	February	20	F. H. Huntley	West Troy	9.4	Good.
2502	February	20	J. E. Glass, Son & McBain	West Troy	10.4	Good.

234	July	16	R. Caldwell	Newburgh	8.6	Fair.
235	July	16	Dr. H. M. Eddy	Kingston	9.4	Good.
766	September	18	F. E. Mitchell	Ballston	9.7	Good.
1385	November	12	Taylor & Treat	Syracuse	9.6	Good.
1386	November	12	W. D. Tollman	Syracuse	9.7	Good.
1387	November	12	W. B. Fuller	Syracuse	11.3	Good.
1388	November	12	R. Bodden	Syracuse	9.1	Good.
1389	November	12	J. M. Cummings	Syracuse	10.1	Good.
1390	November	13	Chas. Hubbard & Co	Syracuse	9.5	Good.

Ipecac — (*Ipecacuanha, U. S. P.*).

Twenty samples examined of the powdered drug, of which all were of good quality as shown below:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
2484	February 20	C. A. Whipple	Troy	Good.
2485	February 20	W. H. Flandran	Troy	Good.
2486	February 20	D. F. Magill	Troy	Good.
2487	February 20	Cavanaugh & Perkins	Troy	Good.
2488	February 20	H. Schneider	Troy	Good.
2489	February 20	E. W. Stoddard	Troy	Good.
2490	February 20	F. M. Brower	Troy	Good.
2491	February 20	L. Burton & Son	Troy	Good.
2492	February 20	Moncrief & Francis	Troy	Good.
2493	February 20	C. H. Shacklady	Troy	Good.
2494	February 20	C. H. Bosworth	Troy	Good.
2495	February 20	J. M. Donnelly	Troy	Good.
2496	February 20	Drake & Moffitt	Troy	Good.
2497	February 20	R. H. Starbuck	Troy	Good.
2498	February 20	A. M. Knowlson	Troy	Good.
2499	February 20	H. Gnadendorff	Troy	Good.
2500	February 20	C. H. Wiberley	Troy	Good.
2503	February 20	F. H. Huntley	West Troy	Good.
2504	February 20	J. E. Glass, Son & McBain	West Troy	Good.
2505	February 20	G. W. Holcomb	Troy	Good.

Diluted Nitric Acid—(*Acidum Nitricum Dilutum, U. S. P.*).

Twenty-one samples tested of which seventeen were of good quality; three of fair quality and one was of excessive strength. The Pharmacopœia requires ten per cent of the absolute acid. The percentage strengths of the samples examined are given in the following table:

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
	1891.					
2637	April	27	W. J. Miller	Hudson	10.2	Good.
2638	April	27	Herbert Best	Hudson	11.6	Good.
2639	April	27	Rossman & McKinstry	Hudson	9.0	Good.
2640	April	27	Van Tassel & Tobey	Hudson	9.4	Good.
2641	April	27	J. M. Johnson	Hudson	8.6	Fair.
2642	April	27	Rice Bros.	Hudson	9.2	Good.
2643	April	27	Byron Stedman	Hudson	9.2	Good.
2644	April	27	Wardle & Son	Hudson	10.6	Good.
230	July	16	Geo. Kraft, Jr.	Newburgh	10.1	Good.
231	July	16	E. R. Post & Co	Newburgh	11.4	Good.
232	July	16	R. Ennis	Newburgh	11.6	Good.
233	July	16	F. A. Grenzeback	Newburgh	9.5	Good.
409	August	7	F. T. Ray & Co.	Utica	11.7	Good.
1377	November	10	Auchampaugh & Hanna	Syracuse	9.1	Good.
1378	November	12	Taylor & Treat	Syracuse	14.5	Excessive strength.
1379	November	12	W. D. Tallman	Syracuse	9.3	Good.
1380	November	12	W. B. Fuller	Syracuse	9.9	Good.
1381	November	12	F. C. Joslyn & Co.	Syracuse	8.5	Fair.
1382	November	12	R. Bodden	Syracuse	9.8	Good.
1383	November	12	J. M. Cummings	Syracuse	9.6	Good.
1384	November	13	Chas. Hubbard & Co.	Syracuse	7.8	Fair.

Tincture of Nux Vomica—(*Tinctura Nucis Vomicæ, U. S. P.*).

One hundred parts, shall, according to the U. S. P., yield two parts of dry extract on evaporation. This test did not necessarily indicate the real strength of the preparation, but it is the only one given in the pharmacopœia and is not without value. Twenty-six samples were examined, of which twenty were rated as of good quality, two fair, and four containing less than one and a half per cent of dry extract and of inferior quality, as follows:

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Parts of dry extract.	Quality.
	1891.					
1160	October	13	M. H. Dillenbeck	Lyons	2.80	Good.
1161	October	14	W. H. Kelley	Newark	2.10	Good.
1162	October	14	B. H. Davis & Co.	Palmyra	0.70	Inferior.
1163	October	15	A. R. Mandeville & Co	Rochester	1.90	Good.
1164	October	15	Hyde & Paige	Rochester	3.24	Good.
1165	October	16	R. W. Chambers & Co	Rochester	1.38	Inferior.
1166	October	16	A. D. Hall & Co.	Canandaigua	1.60	Fair.
1167	October	16	J. A. Barker	Canandaigua	3.36	Good.
1168	October	16	Haviland & Hemuip	Geneva	3.36	Good.
1169	October	16	W. H. Partridge	Geneva	1.28	Inferior.
1170	October	16	J. A. Zobrist	Geneva	1.56	Fair.
1171	October	16	M. Barkman	Geneva	2.90	Good.
1172	October	17	T. B. Sharp & Sons	Seneca Falls	3.24	Good.
1303	November	10	W. B. Bissell	Syracuse	2.80	Good.
1304	November	10	Brown & Dawson	Syracuse	3.60	Good.
1305	November	10	O. Heyne	Syracuse	4.00	Good.

1306	November	11	J. C. Bowe & Co	Syracuse	2.50	Good.
1307	November	11	Coogan & Quigley	Syracuse	2.04	Good.
1308	November	11	Smith & Mott	Syracuse	2.60	Good.
1309	November	12	Taylor & Treat	Syracuse	0.90	Inferior.
1310	November	12	F. C. Joslyn & Co	Syracuse	3.70	Good.
1311	November	12	D. Derby	Syracuse	3.80	Good.
1312	November	12	F. E. Champlin & Co	Syracuse	2.30	Good.
1313	November	13	Wm. Muench.	Syracuse	1.90	Good.
1314	November	13	G. A. Heyne	Syracuse	1.90	Good.
1315	November	13	Chas. Hubbard & Co	Syracuse	4.90	Good.

Phenacetin — (*Para–acet–phenetidine*).

Forty samples received, all of good quality, as follows:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891			
20	July 2	A. M. Knowlson	Troy	Good.
21	July 2	J. M. Donnelly	Troy	Good.
22	July 2	G. W. Holcomb	Troy	Good.
23	July 2	F. M. Brower	Troy	Good.
24	July 2	C. H. Wiberley	Troy	Good.
25	July 2	C. H. Shacklady	Troy	Good.
261	July 16	I. C. Chapman	Newburgh	Good.
262	July 16	Theo. Merrit	Newburgh	Good.
263	July 16	Geo. Kraft, Jr	Newburgh	Good.
264	July 16	E. R. Post & Co.	Newburgh	Good.
265	July 16	L. Y. Wiggins & Son	Newburgh	Good.
266	July 16	David Kingston	Newburgh	Good.
267	July 16	Ira Caldwell	Newburgh	Good.
268	July 16	R. Ennis	Newburgh	Good.
269	July 16	F. A. Grenzebach	Newburgh	Good.
270	July 16	J. A. Joslin	Newburgh	Good.
271	July 16	Dr. H. M. Eddy	Kingston	Good.
300	July 24	N. C. Becker	Amsterdam	Good.
301	July 24	Powell & Gilbert	Amsterdam	Good.
302	July 24	C. W. Striker	Amsterdam	Good.
303	July 24	E. W. Clark	Amsterdam	Good.

304	July	24	G. H. Ingraham	Amsterdam	Good.
305	July	24	Bradford & Lindsay	Amsterdam	Good.
343	July	24	G. Steinführer	Schenectady	Good.
344	July	24	A. T Veeder & Son	Schenectady	Good.
345	July	24	Edward Rosa	Schenectady	Good.
346	July	24	G. E. Duryee	Schenectady	Good.
347	July	24	Wm. Sauter	Schenectady	Good.
348	July	24	W. T. Hanson & Son	Schenectady	Good.
349	July	24	C. H. Horstmann	Schenectady	Good.
350	July	24	Van Zandt & Rector	Schenectady	Good.
474	August	7	J. B. Williams	Utica	Good.
475	August	7	Wm. Howarth	Utica	Good.
476	August	7	G. L. Hill	Utica	Good.
477	August	7	Wm. Blaikie	Utica	Good.
478	August	7	J W. Cone	Utica	Good.
479	August	8	Ogden & Downs	Ilion	Good.
480	August	8	C. W. Palmer & Co	Herkimer	Good.
481	August	8	H. G. Babcock & Co	Little Falls	Good.
482	August	8	J. V. Hemstreet	Little Falls	Good.

Cream of Tartar (Purchased from Grocers) — (*Continued*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
88	July 6	E. E. Bates	Albany	Chiefly acid phosphate and sulphate of lime; fictitious.
89	July 6	J. McCulloch & Son	Albany	95.5 per cent pure; good.
90	July 6	F. Thornton	Albany	Contains some starch; acidity equivalent to 94 per cent cream of tartar; good.
202	July 10	Mrs. J. Welch	Albany	Contains starch and sulphate of lime; inferior.
203	July 10	Chas. Miller	Albany	99.2 per cent pure; good.
204	July 10	J. J. Boyd	Albany	Contains some starch; acidity equivalent to 94.7 per cent cream of tartar; good.
205	July 10	M. J. Gorey	Albany	Chiefly bi-carbonate of soda; error in sale.
440	August 7	J. O. Jones & Sons	Utica	99.1 per cent pure; good.
441	August 7	David Pierce	Utica	Chiefly acid phosphate of lime and starch; fictitious.
442	August 7	J. K. Baker	Utica	98.3 per cent pure; good.
443	August 7	F. J. Gschwind	Utica	Chiefly acid phosphate of lime, starch, and alum; fictitious.
444	August 7	F. William	Utica	Contains starch and sulphate of lime; fair.
445	August 7	M. Timon	Utica	Contains starch and sulphate of lime; inferior.
446	August 7	J. Carroll	Utica	Contains starch and acid phosphate of lime; inferior.
447	August 7	Owen & Co.	Utica	99.1 per cent pure; good.
448	August 7	L. A. Shaw	Utica	Chiefly acid phosphate of lime and starch; fictitious.
449	August 7	T. S. Crosby	Frankfort	Chiefly sulphate of lime and starch; fictitious.
450	August 7	W. H. Waterbury	Frankfort	Acidity equivalent to 89.0 per cent cream of tartar; fair.
451	August 7	W. S. Crosby	Frankfort	Contains sulphate of lime; inferor.
523	Aug. 24	Stewart & Wilson	Troy	Contains acid phosphate of lime and starch; inferior.

524	Aug.	24	Cohen Bros.	Troy	Contains acid phosphate of lime and starch; inferior.
525	Aug.	24	Jas. Kerin	Troy	Contains acid phosphate of lime and starch; inferior.
526	Aug.	24	Masters Bros.	Troy	96.8 per cent pure; good.
527	Aug.	24	F. E. Oothout	Troy	Contains acid phosphate of lime and starch; inferior.
528	Aug.	24	G. H. Lewis	Troy	Contains sulphate of lime and starch; inferior.
529	Aug.	24	J. H. Fairweather	Troy	Contains sulphate of lime and starch; inferior.
530	Aug.	24	S. D. Sweet	Troy	99.1 per cent pure; good.
531	Aug.	24	A. N. Philo	Troy	99.1 per cent pure; good.
532	Aug.	24	W. C. Simmons	Troy	98.7 per cent pure; good.
533	Aug.	24	T. J. Kennedy	Troy	Chiefly acid phosphate of lime and starch; fictitious.
534	Aug.	24	F. L. Munn	Troy	98.3 per cent pure; good.
535	Aug.	24	J. Doherty	Troy	Contains sulphate of lime and starch; inferior.
536	Aug.	24	M. A. Marlow	Troy	Contains sulphate of lime and starch; inferior.
537	Aug.	24	A. O. Dusenbury	Troy	Chiefly acid phosphate of lime and starch; fictitious.
538	Aug.	24	P. Bernstein	Troy	98.3 per cent pure; good.
575	Aug.	28	E. B. Cox	Troy	99.1 per cent pure; good.
576	Aug.	28	G. M. Murphy	Troy	98.7 per cent pure; good.
577	Aug.	28	Caleb Bird	Troy	99.5 per cent pure; good.
578	Aug.	28	P. F. Holton	Troy	Contains sulphate of lime and starch; inferior.
579	Aug.	28	M. Hanley	Troy	Chiefly sulphate of lime and starch; inferior.
580	Aug.	28	F. Heaton	Troy	95.2 per cent pure; good.
581	Aug.	28	C. H. Watson	Troy	Chiefly acid phosphate of lime and starch; fictitious.
582	Aug.	28	F. F. Powers	Troy	Chiefly acid phosphate of lime and starch; fictitious.
583	Aug.	28	Mrs. P. Mann	Troy	Chiefly acid phosphate of lime and starch; fictitious.
584	Aug.	28	W. N. English	Troy	Contains large amount of starch; inferior.
585	Aug.	28	J. A. English	Troy	Chiefly acid phosphate of lime and starch; fictitious.
586	Aug.	28	Philip Paul	Troy	99.1 per cent pure; good.
587	Aug.	28	John Bulman	Troy	Chiefly acid phosphate and sulphate of lime; fictitious.
588	Aug.	28	J. H. Stevens	Troy	Chiefly acid phosphate of lime and starch; fictitious.
589	Aug.	28	O. McChesney & Son	Troy	93.7 per cent pure; good.
621	Sept.	4	K. Egan	Cohoes	94.1 per cent pure; good.

Cream of Tartar (Purchased from Grocers) — (*Continued*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
622	Sept. 4	P. Slavin	Cohoes	Chiefly acid phosphate of lime and starch; fictitious.
623	Sept. 4	J. M. Hall	Cohoes	Contains acid phosphate of lime and starch; inferior.
624	Sept. 4	F. Dings	Cohoes	Chiefly acid phosphate and sulphate of lime; fictitious.
625	Sept. 4	Walsh & Fruchting	Cohoes	Largely sulphate of lime; inferior.
626	Sept. 4	A. J. & F. A. Ablett	Cohoes	Contains sulphate of lime and starch; inferior.
627	Sept. 4	M. V. Santvoord	Cohoes	Contains acid phosphate of lime and starch; inferior.
628	Sept. 4	J. Montgomery	Lansingburgh	Chiefly sulphate of lime and starch; fictitious.
629	Sept. 5	E. L. Demers	Lansingburgh	Contains sulphate of lime and starch; inferior.
695	Sept. 12	D. Hayes	Saratoga Springs	Contains sulphate of lime and starch; inferior.
696	Sept. 12	Richards & Co	Saratoga Springs	99.5 per cent pure; good.
697	Sept. 12	A. F. Mitchell	Saratoga Springs	Chiefly acid phosphate of lime and starch; fictitious.
698	Sept. 12	Warner & Van Ness	Saratoga Springs	Chiefly acid phosphate of lime and starch; fictitious.
699	Sept. 12	L. Ellsworth	Saratoga Springs	Chiefly acid phosphate of lime and starch; fictitious.
700	Sept. 12	H. Palmer	Saratoga Springs	Chiefly acid phosphate of lime and starch; fictitious.
701	Sept. 12	C. Van Deusen	Saratoga Springs	Chiefly acid phosphate of lime and starch; fictitious.
702	Sept. 12	F. V. Hewett & Son	Saratoga Springs	Contains sulphate of lime and starch; inferior.
703	Sept. 12	W. Jennery	Saratoga Springs	Contains acid phosphate of lime and starch; inferior.
704	Sept. 12	J. W. Heaslip	Saratoga Springs	Chiefly acid phosphate of lime and starch; fictitious.
773	Sept. 18	W. E. Reade	Ballston	Chiefly acid phosphate of lime and starch; fictitious.
774	Sept. 18	Cook & Phillips	Ballston	Chiefly acid phosphate of lime and starch; fictitious.
775	Sept. 18	R. G. Dye & Co.	Ballston	Contains sulphate of lime; inferior.
776	Sept. 18	H. Butler.	Ballston	Contains starch; inferior.
777	Sept. 18	G. S. Bram	Ballston	Chiefly acid phosphate of lime and starch; fictitious.

828	Sept.	24	Chas. Moon	Poughkeepsie	98.3 per cent pure; good.
829	Sept.	24	E. M. Nelson	Poughkeepsie	97.9 per cent pure; good.
830	Sept.	24	T. Gillard	Poughkeepsie	Contains acid phosphate of lime and starch; inferior.
831	Sept.	24	Cheney & Hoyt	Poughkeepsie	98.7 per cent pure; good.
832	Sept.	24	G. W. Dobbs & Co	Poughkeepsie	97.4 per cent pure; good.
833	Sept.	24	E. Grace	Poughkeepsie	99 + per cent pure; good.
834	Sept.	24	W. V. Holmes	Poughkeepsie	98.3 per cent pure; good.
835	Sept.	24	Carpenter & Parkhill	Poughkeepsie	99.1 per cent pure; good.
836	Sept.	25	L. Carpenter	Poughkeepsie	98.3 per cent pure; good.
837	Sept.	25	Cornell & Brand	Poughkeepsie	Contains acid phosphate of lime, starch and alum; inferior.
838	Sept.	25	J. D. Muldowney	Poughkeepsie	Consists of inferior baking powder; error in sale.
839	Sept.	25	Gourley Bros	Poughkeepsie	99.4 per cent pure; good.
840	Sept.	25	J. P. Dickinson	Poughkeepsie	99.4 per cent pure; good.
841	Sept.	25	Krieger Bros.	Poughkeepsie	99.0 per cent pure; good.
842	Sept.	25	J. B. Bremel	Poughkeepsie	Contains acid phosphate of lime and starch; inferior.
843	Sept.	25	C. Menickes	Poughkeepsie	Chiefly acid phosphate of lime and starch; fictitious.
844	Sept.	25	J. Elley	Poughkeepsie	Chiefly acid phosphate of lime, starch and alum; fictitious.
845	Sept.	26	H. Sheldon & Co.	Hudson	99.8 per cent pure; good.
846	Sept.	26	D. Stall	Hudson	Chiefly sulphate of lime and starch; fictitious.
847	Sept.	26	G. W. Lanphier	Hudson	89.7 per cent pure; fair.
848	Sept.	26	J. D. Van Deusen	Hudson	Contains acid phosphate of lime and starch; inferior.
849	Sept.	26	Groat & Allen	Hudson	99.4 per cent pure; good.
850	Sept.	26	S. W. Ham	Hudson	Chiefly sulphate of lime, tartaric acid and starch; fictitious.
851	Sept.	26	W. H. Crapser & Co.	Hudson	Contains acid phosphate of lime and starch; inferior.
852	Sept.	26	D. H. Kennedy	Hudson	Contains acid phosphate of lime and starch; inferior.
853	Sept.	26	M. C. Stover	Hudson	Chiefly sulphate of lime and tartaric acid; fictitious.
854	Sept.	26	W. Sluyter	Hudson	Consists of inferior baking powder; error in sale.
855	Sept.	26	J. W. Carlos	Hudson	94.5 per cent pure; fair.

Cream of Tartar (Purchased from Grocers) — (*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
856	Sept. 26	C. N. Guertin	Hudson	98.6 per cent pure; good.
857	Sept. 26	M. Felts	Hudson	99.0 per cent pure; good.
858	Sept. 26	E. D. Niver	Hudson	98.6 per cent pure; good.
1173	Oct. 13	C. B. Price	Lyons	Acidity equivalent to 96.2 per cent cream of tartar; fair.
1174	Oct. 14	A. E. Williams	Newark	Contains acid phosphate of lime and starch; inferior.
1175	Oct. 14	L. M. Chase	Palmyra	Acidity equivalent to 96.2 per cent cream of tartar; fair.
1176	Oct. 16	C. W. Gray	Rochester	Contains acid phosphate of lime and starch; inferior.
1177	Oct. 16	H. Hamilton	Rochester	97.8 per cent pure; good.
1178	Oct. 16	E. W. Budd	Rochester	Chiefly acid phosphate of lime and starch; fictitious.
1179	Oct. 16	A. C. Sommers	Rochester	Chiefly acid phosphate of lime and starch; fictitious.
1180	Oct. 16	I. H Thompson	Rochester	97.8 per cent pure; good.
1181	Oct. 16	R. W. George	Rochester	Chiefly acid phosphate of lime and starch; fictitious.
1182	Oct. 16	F. H. Merlan	Rochester	Chiefly acid phosphate of lime and starch; fictitious.
1183	Oct. 16	J. A. Seel	Rochester	97.8 per cent pure; good.
1184	Oct. 16	W. J. Wegman	Rochester	Chiefly acid phosphate of lime and starch; fictitious.
1185	Oct. 16	B. Cain	Rochester	Contains sulphate of lime and tartaric acid; inferior.
1186	Oct. 16	Eastman & Wheaton	Canandaigua	98.6 per cent pure; good.
1187	Oct. 16	S. Warth	Geneva	Acidity equivalent to 86.5 per cent cream of tartar; fair.
1188	Oct. 17	J. Lawler	Auburn	Chiefly sulphate of lime, starch and tartaric acid; fictitious.

1287	Nov. 13	Wm. Everson	Syracuse	Chiefly acid phosphate of lime, starch and tartaric acid; fictitious.
1288	Nov. 13	J. Hayes	Syracuse	Chiefly acid phosphate of lime, starch and tartaric acid; fictitious.
1289	Nov. 13	H. Bruns	Syracuse	Chiefly sulphate of lime and tartaric acid; fictitious.
1290	Nov. 13	J. Moses	Syracuse	Chiefly sulphate of lime, starch and tartaric acid; fictitious.
1291	Nov. 13	F. J. Meyer	Syracuse	Chiefly sulphate of lime, starch and tartaric acid; fictitious.
1292	Nov. 13	A. Young	Syracuse	97.4 per cent pure; good.
1293	Nov. 13	Andrews Bros	Syracuse	99+ per cent pure; good.
1294	Nov. 13	M. Bull	Syracuse	97.4 per cent pure; good.
1295	Nov. 13	G. J. Lendemer	Syracuse	Chiefly acid phosphate of lime and starch; fictitious.
1296	Nov. 13	D. Mooney	Syracuse	Chiefly sulphate of lime, starch and tartaric acid; fictitious.
1297	Nov. 13	R. Dunn	Syracuse	99+ per cent pure; good.
1298	Nov. 13	Halloran & McCarthy	Syracuse	Chiefly sulphate of lime, starch and tartaric acid; fictitious.

Bromide of Potassium — (*Potassii Bromidum, U. S. P.*).

Eleven samples examined, of which only two fully complied with the pharmacopœial requirements. The other nine possessed too great alkalinity or contained too decided traces of the carbonate, bromate or iodide, and were rated as fair. A list of the samples examined is appended:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
2727	May 28	D. Derby	Syracuse	Fair.
2728	May 28	W. B. Fuller	Syracuse	Fair.
2729	May 28	C. H. Kenyon	Syracuse	Fair.
2730	May 29	E. B. Covert	Syracuse	Fair.
2731	May 29	Kenyon, Potter & Co	Syracuse	Fair.
2732	May 29	P. L. Ryan & Co	Syracuse	Fair.
2733	May 29	Coogan & Quigley	Syracuse	Fair.
2734	May 29	M. G. Spalding	Syracuse	Fair.
2735	May 29	Newton & Hickock	Syracuse	Fair.
2764	May 29	Graves & Reifeit	Rome	Good.
2789	May 29	F. M. Hamlin	Rome	Good.

Saffron — (*Crocus, U. S. P.*).

Thirty-three samples examined, of which eight were of good quality, while twenty-five consisted of "safflower" (*Carthamus tinctorius*). Concerning the substitution of this article for saffron, I quote from a previous report: "The saffron of the Pharmacopœia consists of the stigmas of *Crocus sativus*, and is often known in the trade as Spanish saffron, or true saffron. No other kind of saffron is recognized in the Pharmacopœia, and when it is called for by its officinal name, no other article should be substituted for it. Safflower is very cheap and is often called for, verbally, as a domestic remedy under the name of saffron; but when the demand is for the pharmacopœial drug, it should not be dispensed. At all events, if offered in its stead, the substitution should be explained; but no such explanation was made in any of the above cases." A list of the samples is appended:

Saffron (*Crocus*), U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
2424	Jan. 14	Smalley & Cole	Sandy Hill	Consists of safflower; error in sale.
2433	Jan. 14	F. B. Davis	Fort Edward	Consists of safflower; error in sale.
2748	May 28	W. D. Tallman	Syracuse	Good.
2749	May 28	F. C. Joslyn & Co.	Syracuse	Consists of safflower; error in sale.
2750	May 28	M. G. Spalding	Syracuse	Consists of safflower; error in sale.
2751	May 28	C. H. Kenyon	Syracuse	Consists of safflower; error in sale.
2752	May 28	J. J. Taylor	Syracuse	Consists of safflower; error in sale.
2753	May 29	E. B. Covert	Syracuse	Consists of safflower; error in sale.
2791	May 29	A. J. Broughton	Rome	Consists of safflower; error in sale.
2792	May 29	Graves & Reifert	Rome	Consists of safflower; error in sale.
2793	May 29	F. M. Hamlin	Rome	Consists of safflower; error in sale.
2794	May 29	J. G. Bissell & Co.	Rome	Consists of safflower; error in sale.
2795	May 29	F. J. Hagar & Co.	Rome	Consists of safflower; error in sale.
2796	May 29	J. Halstead	Rome	Consists of safflower; error in sale.
2797	May 29	F. J. Hengge	Rome	Consists of safflower; error in sale.
1316	Nov. 10	W. B. Bissell	Syracuse	Consists of safflower; error in sale.
1317	Nov. 10	R. E. Smith	Syracuse	Consists of safflower; error in sale.
1318	Nov. 10	T. H. Kemter	Syracuse	Consists of safflower; error in sale.
1319	Nov. 10	O. Heyne	Syracuse	Good.
1320	Nov. 10	G.W. Holloway	Syracuse	Good.
1321	Nov. 10	S. D. Devoe	Syracuse	Consists of safflower; error in sale.
1322	Nov. 10	O. P. Barnum	Syracuse	Good.
1323	Nov. 10	Smith & Dalton	Syracuse	Consists of safflower; error in sale.

1324	Nov.	10	P. L. Ryan & Co	Syracuse	Consists of safflower; error in sale.
1325	Nov.	11	E. B. Covert	Syracuse	Consists of safflower; error in sale.
1326	Nov.	11	Kenyon, Potter & Co.	Syracuse	Consists of safflower; error in sale.
1327	Nov.	11	J. C. Bowe & Co	Syracuse	Good.
1328	Nov.	11	Coogan & Quigley	Syracuse	Good.
1329	Nov.	11	M. G. Spalding	Syracuse	Consists of safflower; error in sale.
1330	Nov.	11	Newton & Hickock	Syracuse	Consists of safflower; error in sale.
1331	Nov.	11	Smith & Mott	Syracuse	Good.
1332	Nov.	12	C. H. Kenyon	Syracuse	Consists of safflower; error in sale.
1333	Nov.	13	G. A. Heyne	Syracuse	Good.

Compound Effervescing Powder—(*Pulvis Effervescens Compositus, U. S. P.*).

Seventeen samples examined, of which twelve were of good weight and quality, and in five the contents of either the white or blue paper, or both, were twenty per cent or more short weight. Seidlitz powders are generally measured and not weighed, and while it is by no means necessary that they be made with great accuracy, the contents of the papers should certainly not vary to exceed twenty per cent. A firm in Brooklyn advertise in a leading pharmaceutical journal seidlitz powders denominated "Regular," which contain but two drachms of the seidlitz mixture, instead of two drachms and two scruples, in the blue paper. This is just twenty-five per cent short weight. Particulars concerning the samples examined are appended:

Seidlitz Powder, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
2622	April 27	Albert Clark	Poughkeepsie	Good weight and quality.
2623	April 27	J. V. Humphrey	Poughkeepsie	Good weight and quality.
2624	April 27	C. S. Bowne	Poughkeepsie	Gooe weight and quality.
2625	April 27	E. C. Bolton	Poughkeepsie	Good weight and quality.
2626	April 27	C. Westervelt	Poughkeepsie	Good weight and quality.
2627	April 27	Simpson, Roberts & Co.	Poughkeepsie	Good weight and quality.
2628	April 27	W. F. Turner & Co	Poughkeepsie	Blue paper 20 per cent short weight; inferior.
2645	April 27	Doty & Humphrey	Hudson	Good weight and quality.
2646	April 27	W. J. Miller	Hudson	Good weight and quality.
2647	April 27	Herbert Best	Hudson	Good weight and quality.
2648	April 27	Rossman & McKinstry	Hudson	Good weight and quality.
2649	April 27	Van Tassel & Tobey	Hudson	Blue paper 22.5 per cent short weight; inferior.
2651	April 27	Rice Bros	Hudson	Blue paper 25 per cent short weight; inferior.
2653	April 27	Wardle & Son	Hudson	Good weight and quality.
2754	May 29	M. G. Spalding	Syracuse	Good weight and quality.
2755	May 29	Newton & Hickock	Syracuse	Blue paper 22 per cent and white paper 19 per cent short weight inferior.
2790	May 29	F. M. Hamlin	Rome	Blue paper 23 per cent and white paper 19 per cent short weight; inferior.

Bromide of Sodium — (*Sodii Bromidum, U. S. P.*).

Eight samples examined, of which but one fully complied with the pharmacopœial requirememts. The remaining seven samples reported as fair possessed too great alkalinity or contained too large quantities of iodate, bromate or carbonate. The following is a list of the samples:

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.				
2736	May	28	D. Derby	Syracuse	Fair.
2737	May	28	Kenyon, Potter & Co	Syracuse	Fair.
2738	May	29	P. L. Ryan & Co	Syracuse	Fair.
2739	May	29	Coogan & Quigley	Syracuse	Fair.
2740	May	29	M. G. Spalding	Syracuse	Good.
2741	May	29	Newton & Hickock	Syracuse	Fair.
2742	May	29	Smith & Mott	Syracuse	Fair.
2788	May	29	F. M. Hamlin	Rome	Fair.

Sulphite of Sodium—(*Sodii sulphis, U. S. P.*).

Five samples examined, all of good quality, as follows:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
2743	May 27	J. C. Bowe	Syracuse	Good.
2744	May 27	Coogan & Quigley	Syracuse	Good.
2745	May 27	P. L. Ryan & Co	Syracuse	Good.
2746	May 27	Smith & Dalton	Syracuse	Good.
2747	May 28	Kenyon, Potter & Co	Syracuse	Good.

Precipitated Sulphur — (*Sulphur Præcipitatum, U. S. P.*).

Thirty-six samples examined, of which only seven were of good quality, while twenty-seven were of inferior quality, containing large quantities of sulphate of lime, and two consisted of washed sulphur, ignorantly or carelessly sold for precipitated sulphur. Concerning this article I quote from my last annual report: "The sale of common lac sulphur for the officinal precipitated sulphur is entirely inexcusable. It is loaded with sulphate of lime, and since precipitated sulphur of good quality is easily obtainable in the market, at a slightly higher price, this substitution ought never to be made; but the above results show that the proper article was sold in but about one-quarter of the cases. Pharmacists ought to be familiar with the various grades of the medicinal articles in which they deal, and a good result will be accomplished if, by calling attention to errors of this kind, an improvement in this respect can be brought about. The tests by which genuine precipitated sulphur can be distinguished from the impure commercial article are laid down in the Pharmacopoeia, and are easily applied by the retailer. In this case, however, he hardly needs even to make a test, for the price he pays and name under which he buys sufficiently indicate the quality of the article supplied him. It is not a question whether the article is one of prime importance or not, but whether a drug largely adulterated with inert mineral matter ought to be sold for medicinal uses when a pure one is easily obtainable." The following table gives a description of the samples:

Precipitated Sulphur, U. S. P.

Number of samyle.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
2423	Jan. 14	Smalley & Cole	Sandy Hill	Largely adulterated with sulphate of lime; acid; inferior.
980	Oct. 13	M. H. Dillenbeck	Lyons	Largely adulterated with sulphate of lime; inferior.
981	Oct. 14	W. H. Kelley	Newark	Largely adulterated with sulphate of lime; inferior.
982	Oct. 14	B. H. Davis & Co.	Palmyra	Largely adulterated with sulphate of lime; inferior.
983	Oct. 16	A. D. Paul & Co.	Canandaigua	Largely adulterated with sulphate of lime; inferior.
984	Oct. 16	Pierson & Benham	Canandaigua	Good.
985	Oct. 16	A. S. Newman	Canandaigua	Consists of washed sulphur; error in sale.
986	Oct. 16	E. W. Simmons	Canandaigua	Largely adulterated with sulphate of lime; inferior.
987	Oct. 16	J. A. Barker	Canandaigua	Largely adulterated with sulphate of lime; inferior.
988	Oct. 16	A. L. Sweet	Geneva	Consists of washed sulphur; error in sale.
989	Oct. 16	Haviland & Hennip	Geneva	Largely adulterated with sulphate of lime; inferior.
990	Oct. 16	W. H. Partridge	Geneva	Largely adulterated with sulphate of lime; inferior.
991	Oct. 16	J. A. Zobrist	Geneva	Adulterated with sulphate of lime; inferior.
992	Oct. 17	Davis & Casey	Seneca Falls	Good.
993	Oct. 17	T. B. Sharp & Sons	Seneca Falls	Largely adulterated with sulphate of lime; inferior.
994	Oct. 17	P. Van Kleeck	Seneca Falls	Largely adulterated with sulphate of lime; inferior.
1349	Nov. 10	Auchampaugh & Hanna	Syracuse	Largely adulterated with sulphate of lime; inferior.
1350	Nov. 10	R. A. Smith	Syracuse	Largely adulterated with sulphate of lime; inferior.
1351	Nov. 10	Brown & Dawson	Syracuse	Largely adulterated with sulphate of lime; inferior.
1352	Nov. 10	T. H. Kemter	Syracuse	Largely adulterated with sulphate of lime; inferior.
1353	Nov. 10	O. Heyne	Syracuse	Largely adulterated with sulphate of lime; inferior.
1354	Nov. 10	G. W. Holloway	Syracuse	Largely adulterated with sulphate of lime; inferior.
1355	Nov. 10	S. D. Devoe	Syracuse	Good.

Precipitated Sulphur, U. S. P.—(*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
1356	Nov. 10	O. P. Barnum........	Syracuse	Good.
1357	Nov. 10	Smith & Dalton.......	Syracuse	Largely adulterated with sulphate of lime; inferior.
1358	Nov. 10	P. L. Ryan & Co......	Syracuse	Largely adulterated with sulphate of lime; inferior.
1359	Nov. 11	E. B. Covert	Syracuse	Largely adulterated with sulphate of lime; inferior.
1360	Nov. 11	Kenyon, Potter & Co..	Syracuse	Largely adulterated with sulphate of lime; inferior.
1361	Nov. 11	J. C. Bowe & Co	Syracuse	Adulterated with sulphate of lime; inferior.
1362	Nov. 11	Coogan & Quigley.....	Syracuse	Good.
1363	Nov. 12	F. C. Joslyn & Co.....	Syracuse	Largely adulterated with sulphate of lime; inferior.
1364	Nov. 12	D. Derby............	Syracuse	Largely adulterated with sulphate of lime; inferior.
1365	Nov. 13	William Muench......	Syracuse	Largely adulterated with sulphate of lime; inferior.
1366	Nov. 13	G. A. Heyne..........	Syracuse	Good.
1367	Nov. 13	E. W. Thomas........	Syracuse	Largely adulterated with sulphate of lime; inferior.
1368	Nov. 13	C. H. Norton.........	Syracuse	Good.

Washed Sulphur — (*Sulphur Lotum, U. S. P.*).

Forty-one samples examined, of which thirty were of good quality, eight of inferior quality, not being washed at all, but possessing all the natural acidity of the common flowers of sulphur, and two consisted of precipitated sulphur of good and one of precipitated sulphur of inferior quality, sold through ignorance or carelessness for washed sulphur, which was called for in writing. I quote from my last annual report: "Washed sulphur is one of the articles which has been selected for examination, not because it is a very important drug, but to test the carefulness and reliability of the dealer. The natural acidity of commercial sublimed sulphur, or flowers of sulphur, is removed by treatment with ammonia and subsequent washing, and as it is easily prepared by the retailer, or obtained from reliable dealers, there is no reason why another article should be substituted for it, or an impure article be sold." The following table gives a description of the samples:

Washed Sulphur, U. S. P.

Number of sample.	Date of collection		OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.				
2418	January	14	C. P. Callen	Glens Falls	Good.
2431	January	14	E. L. Potter	Fort Edward	Good.
2432	January	14	Countryman & Wing	Fort Edward	Good.
2520	March	17	Wm. McAllister	Albany	Good.
2521	March	17	J. D. Palmatier	Albany	Good.
2522	March	17	W. E. Masten	Albany	Inferior.
2523	March	17	W. S. Elmendorf	Albany	Good.
2524	March	17	J. W. Heller & Co	Albany	Good.
2525	March	17	Turner Bros	Albany	Inferior.
2526	March	17	M. W. Macomber	Albany	Good.
2562	March	17	S. C. Hodgkins	Albany	Good.
2563	March	17	D. H. Fonda Drug Co	Albany	Good.
2572	March	19	F. W. Hoffman	Albany	Good.
2573	March	19	J. De P. Townsend	Albany	Good.
2574	March	19	F. J. Smith	Albany	Good.
2575	March	19	Frank Richardson	Albany	Good.
2576	March	19	Chas. Schaefer	Albany	Good.
2577	March	19	W. B. Sabey	Albany	Consists of precipitated sulphur; inferior; error in sale.
2578	March	19	C. H. Gaus	Albany	Good.
2589	March	27	J. H. Miller	Greenbush	Good.
2601	March	28	Dr. M. McHarg	Albany	Good.
2602	March	28	Dr. W. L. Purple	Albany	Good.

2603	March	28	Dr. T. K. Perry	Albany	Good.
2604	March	28	C. H. Smith & Co.	Albany	Good.
995	October	17	Davis & Casey	Seneca Falls	Consists of precipitated sulphur; error in sale.
996	October	17	P. Van Kleeck	Seneca Falls	Consists of precipitated sulphur; error in sale.
1334	November	10	Auchampaugh & Hanna	Syracuse	Good.
1335	November	10	R. E. Smith	Syracuse	Good.
1336	November	10	Brown & Dawson	Syracuse	Good.
1337	November	10	T. H. Kemter	Syracuse	Inferior.
1338	November	10	G. W. Holloway	Syracuse	Good.
1339	November	10	S. D. Devoe	Syracuse	Inferior.
1340	November	10	O. P. Barnum	Syracuse	Good.
1341	November	10	Smith & Dalton	Syracuse	Good.
1342	November	11	Kenyon, Potter & Co	Syracuse	Good.
1343	November	11	Coogan & Quigley	Syracuse	Inferior.
1344	November	11	M. G. Spalding	Syracuse	Good.
1345	November	11	Newton & Hickock	Syracuse	Good.
1346	November	11	Smith & Mott	Syracuse	Inferior.
1347	November	12	F. E. Champlin & Co	Syracuse	Inferior.
1348	November	13	G. A. Heyne	Syracuse	Inferior.

Diluted Sulphuric Acid—(*Acidum Sulphuricum Dilutum, U. S. P.*).

Sixty-two samples examined, of which thirty-nine were of good quality, eight were of fair and three of inferior quality, while eleven possessed excessive strength and one consisted of diluted acetic acid. The diluted acid of the Pharmacopœia should contain ten per cent of the officinal sulphuric acid and have a specific gravity of about 1.067. For standards employed in rating these and other diluted acids, except acetic, see under diluted hydrobromic acid. The following table gives a description of the samples examined:

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
	1891.					
2430	January	14	F. B. Davis	Fort Edward	11.3	Good.
2701	May	28	G. A. Heyne	Syracuse	9.8	Good.
2702	May	28	Wm. Muench	Syracuse	9.4	Good.
2703	May	28	S. D. Devoe	Syracuse	9.4	Good.
2704	May	28	O. P. Barnum	Syracuse	11.2	Good.
2705	May	28	E. B. Covert	Syracuse	15.0	Excessive strength.
2706	May	28	H. E. Richardson	Syracuse	8.0	Fair.
2707	May	28	Bibbins & Sherman	Syracuse	13.4	Excessive strength.
2708	May	28	Newton & Hickock	Syracuse	8.4	Fair.
2709	May	28	Smith & Mott	Syracuse	9.2	Good.
2710	May	28	E. W. Thomas	Syracuse	10.4	Good.
2769	May	29	A. J. Broughton	Rome	15.5	Excessive strength.
2770	May	29	Graves & Reifert	Rome	9.2	Good.
2771	May	29	F. M. Hamlin	Rome	11.0	Good.
2772	May	29	J. G. Bissell & Co	Rome	11.0	Good.
2773	May	29	F. J. Hagar & Co	Rome	12.0	Good.

2774	May	29	J. Halstead	Rome	18.6	Excessive strength.
2775	May	29	F. J. Hengge	Rome	21.0	Excessive strength.
14	July	2	H. Schneider	Troy	10.4	Good.
15	July	2	E. W. Stoddard	Troy	8.1	Fair.
16	July	2	Moncrief & Francis	Troy	6.5	Inferior.
17	July	2	W. M. Groom & Co.	Troy	16.3	Excessive strength.
18	July	2	F. M. Brower,	Troy	12.3	Good.
19	July	2	C. H. Shacklady	Troy	10.8	Good.
327	July	24	G. Steinführer	Schenectady	9.0	Good.
405	August	7	E. E. Jones	Utica	12.5	Good.
406	August	7	Luce & Plumb	Utica	9.7	Good.
407	August	7	C. H. Jones	Utica	10.4	Good.
408	August	7	Kellogg & Carrier	Frankfort	10.1	Good.
767	September	18	C. H. Whitney	Mechanicville	12.4	Good.
1111	October	13	G. W. Getman	Lyons	7.8	Fair.
1112	October	14	R. E. Morse & Son	Newark	9.4	Good.
1113	October	14	M. W. Palmer	Newark	12.4	Good.
1114	October	14	N. R. Gardner	Palmyra	7.2	Inferior.
1115	October	14	J. W. Rushmore	Palmyra	9.5	Good.
1116	October	15	H. Fellman	Rochester	9.9	Good.
1117	October	15	W. W. Steele	Rochester	16.2	Excessive strength.
1118	October	15	G. W. Howell & Son	Rochester	8.9	Consists of diluted acetic acid; error in sale.
1119	October	15	Dake Bros	Rochester	21.9	Excessive strength.
1120	October	15	J. F. Nagle	Rochester	10.2	Good.
1121	October	15	W. T. McBay	Rochester	10.3	Good.
1122	October	15	C. W. McDonald & Co	Rochester	8.8	Fair.
1123	October	15	H. B Guilford	Rochester	11.7	Good.
1124	October	15	A. H. Dewey	Rochester	9.6	Good.
1125	October	15	R. M. Cole,	Rochester	12.3	Good.

Diluted Sulphuric Acid, U. S. P.—(*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
	1891.				
1126	October 15	Czar Dunning	Rochester	9.1	Good.
1127	October 15	G. H. Haass	Rochester	10.5	Good.
1128	October 15	A. B. Chamberlain	Rochester	16.7	Excessive strength.
1129	October 15	R. J. Strasenburgh	Rochester	9.2	Good.
1130	October 16	R. Kimpton	Rochester	14.2	Excessive strength.
1131	October 17	H. L. Adams	Auburn	10.8	Good.
1132	October 17	J. L. Elliott	Auburn	8.6	Fair.
1133	October 17	A. H. Hamilton	Auburn	8.1	Fair.
1134	October 17	H. G. Hudson	Auburn	9.2	Good.
1135	October 17	L. Hunt	Auburn	11.3	Good.
1391	November 11	E. B. Covert	Syracuse	9.2	Good.
1392	November 11	Kenyon, Potter & Co	Syracuse	9.9	Good.
1393	November 11	M. G. Spalding	Syracuse	15.6	Excessive strength.
1394	November 11	Newton & Hickock	Syracuse	8.5	Fair.
1395	November 12	F. E. Champlin & Co	Syracuse	9.8	Good.
1396	November 13	Wm. Muench	Syracuse	10.1	Good.
1397	November 13	C. H. Norton	Syracuse	6.8	Inferior.

Whisky — (*Spiritus Frumenti, U. S. P.*).

Seven samples examined, of which six were of good and one of inferior quality, as follows:

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Specific gravity.	Residue.	Quality.
	1891.						
1398	November	10	O. P. Barnum	Syracuse	0.928	0.08	Good.
1399	November	10	P. L. Ryan & Co.	Syracuse	0.928	0.19	Good.
1400	November	10	D. Derby	Syracuse	0.928	0.188	Good.
1401	November	12	F. E. Champlin & Co.	Syracuse	0.926	0.714	Inferior.
1402	November	13	Wm. Muench	Syracuse	0.928	0.124	Good.
1403	November	13	J. A. Heyne	Syracuse	0.928	0.14	Good.
1404	November	13	Chas. Hubbard & Co.	Syracuse	0.930	0.07	Good.

FOODS.

The following were the articles examined:

Coffee.

One hundred and eighty-two samples were examined. The price was not specified in calling for the article, nor the kind of coffee desired, and, as a result, coffee of good quality and free from adulteration was sold in about three-fifths of the cases. Fifty samples contained both chicory and other foreign vegetable matter, such as peas and rye; eight samples contained chicory alone, and twenty contained other vegetable adulterants. Artificial coffee berries are now largely manufactured at home and abroad, but no samples of the unground berries were found in the hands of retailers. From a manufacturer in Sioux City, Iowa, however, we obtained a sample of imitation coffee berries, offered by him at eight cents a pound, and of "coffee substitute," apparently the broken refuse from the manufacture of the berries, offered at four cents. The articles he guarantees to be "strictly vegetable and not a thing in them injurious, which is in favor of our goods over many in the market." Inclosed with his letter was a copy of a testimonial from an analytical chemist of Louisville, certifying to the harmlessness and wholesomeness of his products. From a firm in Philadelphia we also obtained a sample of imitation berries, and from a Boston manufactutrer samples of "coffee pellets" and "crushed coffee pellets." The former were small cylindrical masses and the latter was in coarse powder. Complete analyses have not as yet been made of these products. The coffee berries are a fairly good imitation of real coffee, being of good color and of different sizes and shapes. They lack, however, in every case the thin fibers found in the groove of real coffee, and when crushed between the teeth are harder and less brittle, and possess none of the distinctive flavor of true coffee. With such imitations upon the market it is evident that the consumer who has his coffee weighed out and ground in his presence is no longer sure of getting an unadulterated article, since these fraudulent berries may be mixed with real coffee berries in any desired proportion by either the wholesale or retail dealer. Various "coffee mixtures," consisting of ground cereals and other vegetable material, and containing no real coffee whatever, intended for mixing with ground coffee, are sold by wholesale dealers at various prices. It is doubtful whether any of these articles contain anything of an injurious nature, but the sale of such fraudulent substitutes, at a price which is out of all proportion to any slight value they may possess as nutrients, can not be too strongly condemned. A list of the samples examined is appended:

Coffee — (*Continued*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891			
598	Sept. 4	Carroll & Harwood	Cohoes	Contains foreign starch and chicory.
599	Sept. 4	J. Montgomery	Lansingburgh	Unadulterated.
600	Sept. 5	E. L. Demers	Lansingburgh	Unadulterated.
601	Sept. 5	Edward St. Jean	Lansingburgh	Contains chicory.
685	Sept. 12	D. Hayes	Saratoga	Contains foreign starch and chicory.
686	Sept. 12	Richards & Co.	Saratoga	Contains foreign starch.
687	Sept. 12	A. F. Mitchell	Saratoga	Unadulterated.
688	Sept. 12	Warner & Van Ness	Saratoga	Unadulterated.
689	Sept. 12	L. Ellsworth	Saratoga	Contains foreign starch and chicory.
690	Sept. 12	J. W. Heaslip	Saratoga	Unadulterated.
691	Sept. 12	H. Palmer	Saratoga	Unadulterated.
692	Sept. 12	C. Van Dusen	Saratoga	Unadulterated.
693	Sept. 12	F. V. Hewitt & Son	Saratoga	Contains foreign starch and chicory.
694	Sept. 12	W. Jennery	Saratoga	Contains foreign starch.
768	Sept. 18	W. E. Reade	Ballston	Contains foreign starch and chicory.
769	Sept. 18	Cook & Phillips	Ballston	Contains foreign starch and chicory.
770	Sept. 18	R. G. Dye & Co	Ballston	Contains foreign starch and chicory.
771	Sept. 18	H. Butler.	Ballston	Contains foreign starch and chicory.
772	Sept. 18	G. S. Brown	Ballston	Contains foreign starch and chicory.
793	Sept. 24	Charles Moon	Poughkeepsie	Unadulterated.
794	Sept. 24	Charles Moon	Poughkeepsie	Contains foreign starch and chicory.
795	Sept. 24	E. M. Nelson	Poughkeepsie	Unadulterated.
796	Sept. 24	E. M. Nelson	Poughkeepsie	Contains chicory.

797	Sept. 24	T. Jillard	Poughkeepsie	Unadulterated.
798	Sept. 24	Cheney & Hoyt	Poughkeepsie	Unadulterated.
799	Sept. 24	Cheney & Hoyt	Poughkeepsie	Contains foreign starch.
800	Sept. 24	G. W. Dobbs & Co	Poughkeepsie	Unadulterated.
801	Sept. 24	E. Grace	Poughkeepsie	Unadulterated.
802	Sept. 24	W. V. Holmes	Poughkeepsie	Unadulterated.
803	Sept. 24	Carpenter & Parkhill	Poughkeepsie	Contains foreign starch.
804	Sept. 25	L. Carpenter	Poughkeepsie	Unadulterated.
805	Sept. 25	Cornell & Brand	Poughkeepsie	Contains foreign starch and chicory.
806	Sept. 25	J. D. Muldowney	Poughkeepsie	Unadulterated.
807	Sept. 25	Gourley Bros	Poughkeepsie	Contains foreign starch and chicory.
808	Sept. 25	J. J. M Combs	Poughkeepsie	Unadulterated.
809	Sept. 25	J. P. Dickinson	Poughkeepsie	Contains foreign starch.
810	Sept. 25	Krieger Bros	Poughkeepsie	Unadulterated.
811	Sept. 25	J. B. Bremel	Poughkeepsie	Unadulterated.
812	Sept. 25	C. Meinckes	Poughkeepsie	Contains foreign starch and chicory.
813	Sept. 25	Great Atlantic & Pacific Tea Co	Poughkeepsie	Contains foreign starch and chicory.
814	Sept. 25	L. Theysohn	Poughkeepsie	Unadulterated.
815	Sept. 25	J. Eley	Poughkeepsie	Unadulterated.
816	Sept. 26	H. Sheldon & Co	Hudson	Unadulterated.
817	Sept. 26	S. Stall	Hudson	Unadulterated.
818	Sept. 26	J. D. Van Deusen	Hudson	Unadulterated.
819	Sept. 26	Groat & Allen	Hudson	Contains foreign starch.
820	Sept. 26	S. W. Ham	Hudson	Unadulterated.
821	Sept. 26	W. H. Crapser & Co	Hudson	Unadalterated.
822	Sept. 26	D. H. Kennedy	Hudson	Unadulterated.
823	Sept. 26	M. C. Shaver	Hudson	Contains foreign starch and chicory.
824	Sept. 26	J. W. Carlos	Hudson	Unadulterated.
825	Sept. 26	C. N. Guertin	Hudson	Unadulterated.
826	Sept. 26	M. Felts	Hudson	Unadulterated.

Coffee — (*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
827	Sept. 26	E. D. Niver	Hudson	Contains foreign starch.
959	Oct. 13	C. B. Price	Lyons	Unadulterated.
960	Oct. 14	A. E. Williams	Newark	Unadulterated.
961	Oct. 14	L. M. Chase	Palmyra	Unadulterated.
962	Oct. 16	M. Joiner	Rochester	Unadulterated.
963	Oct. 16	Eastman & Wheaton	Canandaigua	Unadulterated.
964	Oct. 16	S. Warth	Geneva	Unadulterated.
965	Oct. 17	John Lawler	Auburn	Unadulterated.
1269	Nov. 13	Wm. Everson	Syracuse	Unadulterated.
1270	Nov. 13	J. Hayes	Syracuse	Contains foreign starch.
1271	Nov. 13	H. Burns	Syracuse	Unadulterated.
1272	Nov. 13	J. Moses	Syracuse	Unadulterated.
1273	Nov. 13	F. J. Meyer	Syracuse	Unadulterated.
1274	Nov. 13	A. Young	Syracuse	Unadulterated.
1275	Nov. 13	Andrews Bros	Syracuse	Unadulterated.
1276	Nov. 13	M. Bull	Syracuse	Unadulterated.
1277	Nov. 13	G. J. Lendemer	Syracuse	Unadulterated.
1278	Nov. 13	D. Mooney	Syracuse	Unadulterated.
1279	Nov. 13	R. Dunn	Syracuse	Unadulterated.
1280	Nov. 13	Halloran & McCarthy	Syracuse	Unadulterated.

Jellies.

Four samples of fruit jellies were examined, of which two were found to contain aniline dyes as coloring material, as follows:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Kind.	Foreign coloring.
	1891.				
1299	Nov. 13	Wm. Everson	Syracuse	Red currant.	None detected.
1300	Nov. 13	A. Young*	Syracuse	Currant	Colored with aniline dye; magenta.
1301	Nov. 13	H. Burns	Syracuse	Raspberry	None detected.
1302	Nov. 13	M. Bull	Syracuse	Grape	Colored with aniline dye.

* Put up by F. & J. Heinz, Pittsburgh, Pa.

Mustard.

Thirteen samples were received, of which six contained both flour or foreign starch and turmeric, and seven contained foreign starch alone. A list of samples is appended:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
973	Oct. 13	C. B. Price	Lyons	Contains foreign starch and turmeric.
974	Oct. 14	A. E. Williams	Newark	Contains foreign starch and turmeric.
975	Oct. 14	L. M. Chase	Palmyra	Contains foreign starch.
976	Oct. 16	M. Joiner	Rochester	Contains foreign starch.
977	Oct. 16	Eastman & Wheaton	Canandaigua	Contains foreign starch.
978	Oct. 16	S. Waith	Geneva	Contains foreign starch and turmeric.
979	Oct. 17	John Lawler	Auburn	Contains foreign starch.
1281	Nov. 13	Wm. Everson	Syracuse	Contains foreign starch.
1282	Nov. 13	J. Hayes	Syracuse	Contains foreign starch and turmeric.
1283	Nov. 13	H. Bruns	Syracuse	Contains foreign starch.
1284	Nov. 13	J. Moses	Syracuse	Contains foreign starch.
1285	Nov. 13	F. J. Meyer	Syracuse	Contains foreign starch and turmeric.
1286	Nov. 13	A. Young	Syracuse	Contains foreign starch and turmeric.

Black Pepper.

Probably no spice is more generally adulterated than pepper. Not only is the dust and dirt which accompanies the berries, and should be removed by screening, intentionally mixed with the berries in grinding, but artificial mixtures of a great variety of substances, skillfully compounded, are made in quantity to be used in adulterating the pepper to any desired extent. Among the substances most frequently employed for this purpose are mustard hulls, rice, corn, ground cocoanut shells, wheat flour and peas. None of the substances are in any sense harmful in the quantities used, but the sale of such rubbish for pepper can not be too strongly condemned. Of sixty-six samples examined forty-eight were more or less largely adulterated. One sample contained cayenne and ground cocoanut shell was detected in fifteen. A list of the samples examined is appended:

Black Pepper, Ground.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
61	July 3	W. H. Golden	Albany	Contains foreign vegetable material.
602	Sept. 4	K. Egan	Cohoes	Contains foreign vegetable material.
603	Sept. 4	P. Slavin	Cohoes	Contains foreign vegetable material.
604	Sept. 4	A. Bessette	Cohoes	Contains foreign vegetable material.
605	Sept. 4	J. M. Hall	Cohoes	Unadulterated.
606	Sept. 4	F. Dings	Cohoes	Contains foreign vegetable material.
607	Sept. 4	Walch & Fruchting	Cohoes	Contains foreign vegetable material.
608	Sept. 4	A. J. & F. A. Ablett	Cohoes	Contains foreign vegetable material.
609	Sept. 4	M. V. Van Santvoord	Cohoes	Contains foreign vegetable material.
610	Sept. 4	Carroll & Harwood	Cohoes	Unadulterated.
611	Sept. 4	J. Montgomery	Lansingburgh	Contains foreign vegetable material.
612	Sept. 5	E. L. Demers	Lansingburgh	Contains foreign vegetable material.
613	Sept. 5	Edward St. Jean	Lansingburgh	Contains foreign vegetable material.
705	Sept. 12	D. Hayes	Saratoga	Contains foreign vegetable material.
706	Sept. 12	Richards & Co.	Saratoga	Contains foreign vegetable marerial.
707	Sept. 12	A. F. Mitchell	Saratoga	Unadulterated.
708	Sept. 12	Warner & Van Ness	Saratoga	Contains foreign vegetable material.
709	Sept. 12	L. Ellsworth	Saratoga	Contains foreign vegetable material.
710	Sept. 12	J. W. Heaslip	Saratoga	Contains foreign vegetable material.
711	Sept. 12	H. Palmer	Saratoga	Contains foreign vegetable material.
712	Sept. 12	C. Van Deusen	Saratoga	Unadulterated.
713	Sept. 12	F. V. Hewitt & Son	Saratoga	Contains foreign vegetable material.
714	Sept. 12	W. Jennery	Saratoga	Contains foreign vegetable material.

778	Sept.	18	W. E. Reade	Ballston	Contains foreign vegetable material.
779	Sept.	18	Cook & Philips	Ballston	Contains foreign vegetable material.
780	Sept.	18	R. G. Dye & Co.	Ballston	Contains foreign vegetable material.
781	Sept.	18	H. Butler	Ballston	Contains foreign vegetable material.
782	Sept.	18	G. S. Brann	Ballston	Contains foreign vegetable material.
926	Sept.	24	Chas. Moon	Poughkeepsie	Contains foreign vegetable material.
927	Sept.	24	E. M. Nelson	Poughkeepsie	Contains foreign vegetable material.
928	Sept.	24	T. Jillard	Poughkeepsie	Unadulterated.
929	Sept.	24	Cheney & Hoyt	Poughkeepsie	Unadulterated.
930	Sept.	24	G. W. Dobbs & Co.	Poughkeepsie	Contains foreign vegetable material.
931	Sept.	24	E. Grace	Poughkeepsie	Unadulterated.
932	Sept.	24	W. V. Holmes	Poughkeepsie	Unadulterated.
933	Sept.	24	Carpenter & Parkhill	Poughkeepsie	Contains foreign vegetable material.
934	Sept.	25	L. Carpenter	Poughkeepsie	Unadulterated.
935	Sept.	25	Cornell and Brand	Poughkeepsie	Unadulterated.
936	Sept.	25	Gourley Bros.	Poughkeepsie	Contains foreign vegetable material.
937	Sept.	25	J. J. McCombs	Poughkeepsie	Unadulterated.
938	Sept.	25	J. P. Dickinson	Poughkeepsie	Contains foreign vegetable material.
939	Sept.	25	Kreiger Bros.	Poughkeepsie	Contains foreign vegetable material.
940	Sept.	25	J. B. Brunel	Poughkeepsie	Unadulterated.
941	Sept.	25	C. Meinckes	Poughkeepsie	Contains foreign vegetable material.
942	Sept.	25	L. Theysohn	Poughkeepsie	Contains foreign vegetable material.
943	Sept.	25	J. Eley	Poughkeepsie	Contains foreign vegetable material.
944	Sept.	26	H. Sheldon & Co.	Hudson	Contains foreign vegetable material.
945	Sept.	26	S. Stall	Hudson	Unadulterated.
946	Sept.	26	J. D. Van Densen	Hudson	Unadulterated.
947	Sept.	26	Groat & Allen	Hudson	Contains foreign vegetable material.
948	Sept.	26	S. W. Ham	Hudson	Contains foreign vegetable material.
949	Sept.	26	W. H. Crapser & Co.	Hudson	Contains foreign vegetable material.
950	Sept.	26	D. H. Kennedy	Hudson	Unadulterated.
951	Sept.	26	M. C. Shaver	Hudson	Contains foreign vegetable material.

Black Pepper, Ground — (*Continued*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
952	Sept. 26	W. Sluyter	Hudson	Contains foreign vegetable material.
953	Sept. 26	J. W. Carlos	Hudson	Contains foreign vegetable material.
954	Sept. 26	C. N. Guertin	Hudson	Unadulturated.
955	Sept. 26	M. Felts	Hudson	Unadulterated.
956	Sept. 26	E. D. Niver	Hudson	Contains foreign vegetable material.
966	Oct. 13	C. B. Price	Lyons	Contains foreign vegetable material.
967	Oct. 14	A. E. Williams	Newark	Contains foreign vegetable mattrial.
968	Oct. 14	L. M. Chase	Palmyra	Contains foreign vegetable material.
969	Oct. 16	M. Joiner	Rochester	Unadulterated.
970	Oct. 16	Eastman & Wheaton	Canandaigua	Contains foreign vegetable material.
971	Oct. 16	S. Warth	Geneva	Contains foreign vegetable material.
972	Oct. 17	John Lawler	Auburn	Contains foreign vegetable material.

Pickles.

Two samples of cucumber pickles were examined in which no trace of copper was found. The samples were as follows:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
957	September 24	T. Jillard	Poughkeepsie	No copper.
958	September 25	J. B. Bremel	Poughkeepsie	No copper.

Sugar, granulated — (*Continued*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
124	July 6	C. Muessig	Albany	Good.
125	July 6	B. Troidle	Albany	Good.
126	July 6	J. H. Pauley	Albany	Good.
127	July 6	M. S. Keenholts	Albany	Good.
128	July 6	F. Froelich	Albany	Good.
129	July 6	S. Groat	Albany	Good.
130	July 6	D. T. Fuller	Albany	Good.
131	July 6	W. Mascord	Albany	Good.
132	July 6	H. Streibert	Albany	Good.
133	July 6	J. H. & A. E. Goffe	Albany	Good.
134	July 6	Ann Kelly	Albany	Good.
135	July 6	E. E. Bates	Albany	Good.
136	July 6	L. J. Hopkins	Albany	Good.
137	July 6	W. F. Kearney	Albany	Good.
138	July 6	J. McCulloch & Son	Albany	Good.
139	July 6	Hart & Young	Albany	Good.
140	July 6	F. Thornton	Albany	Good.
164	July 9	G. Hart	Albany	Good.
165	July 9	H. Albert, Jr	Albany	Good.
166	July 9	L. H. Kircher	Albany	Good.
167	July 9	Geo. Burkart	Albany	Good.
189	July 10	G. S. Rivenburg	Albany	Good.
190	July 10	Calkins Bros	Albany	Good.
191	July 10	J. H. Draper	Albany	Good.

192	July	10	J. J. Boyd	Albany	Good.
193	July	10	Jas. Ramsey	Albany	Good.
194	July	10	G. M. Brocket	Albany	Good.
195	July	10	Wm. McBurney	Albany	Good.
196	July	10	J. & P. McGinnis	Albany	Good.
197	July	10	J. Little	Albany	Good.
198	July	10	M. J. Gorey	Albany	Good.
199	July	10	J. McGowan	Albany	Good.
200	July	10	M. Delehanty	Albany	Good.
201	July	10	R. Dillow	Albany	Good.

Powdered Sugar.

Seventy-three samples of powdered sugar were examined and all were of excellent quality and free from adulteration. A list of the samples is appended:

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.				
143	July	6	J. J. Craven	Albany	Good.
144	July	6	L. J. Hopkins	Albany	Good.
145	July	6	W. F. Kearney	Albany	Good.
146	July	6	Hart & Young	Albany	Good.
154	July	9	Thomas Mahar	Albany	Good.
155	July	9	T. W. O'Hagan	Albany	Good.
156	July	9	G. E. Benedict	Albany	Good.
157	July	9	Wm. Van Valkenburg	Albany	Good.
158	July	9	E. P. Patten	Albany	Good.
159	July	9	A. Mosher	Albany	Good.
160	July	9	H. Albert, Jr	Albany	Good.
161	July	9	L. H. Kircher	Albany	Good.
162	July	9	George Burkart	Albany	Good.
163	July	9	E. Palmer	Albany	Good.
180	July	10	Calkins Bros	Albany	Good.
181	July	10	J. H. Draper	Albany	Good.
182	July	10	Chas. Miller	Albany	Good.
183	July	10	J. J. Boyd	Albany	Good.
184	July	10	Jas. Ramsey	Albany	Good.
185	July	10	G. M. Brocket	Albany	Good.

186	July	10	Wm. McBurney	Albany	Good.
187	July	10	J. & P. McGinnis	Albany	Good.
188	July	10	J. McGowan	Albany	Good.
426	August	7	J. O. Jones & Sons	Utica	Good.
427	August	7	David Pierce	Utica	Good.
428	August	7	J. K. Baker	Utica	Good.
429	August	7	F. J. Gschwind	Utica	Good.
430	August	7	F. Williams	Utica	Good.
431	August	7	M. Dwyer	Utica	Good.
432	August	7	W. Timon	Utica	Good.
433	August	7	J. Carroll	Utica	Good.
434	August	7	Owen & Co	Utica	Good.
435	August	7	L. A. Shaw	Utica	Good.
436	August	7	A. Girard	Utica	Good.
437	August	7	T. S. Crosby	Frankfort	Good.
438	August	7	W. H. Waterbury	Frankfort	Good.
439	August	7	W. S. Crosby	Frankfort	Good.
504	August	24	Stewart & Wilson	Troy	Good.
505	August	24	Cohen Bros.	Troy	Good.
506	August	24	A. DeFreest	Troy	Good.
507	August	24	Jas. Keran	Troy	Good.
508	August	24	Masters Bros	Troy	Good.
509	August	24	F. E. Oothout	Troy	Good.
510	August	24	G. H. Lewis	Troy	Good.
511	August	24	J. H. Fairweather	Troy	Good.
512	August	24	Bosworth & Paine	Troy	Good.
513	August	24	S. D. Sweet	Troy	Good.
514	August	24	A. N. Philo	Troy	Good.
515	August	24	J. P. Colby	Troy	Good.
516	August	24	W. C. Simmons	Troy	Good.
517	August	24	T. J. Kennedy	Troy	Good.

Sugar, Powdered — (*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
518	August 24	F. L. Munn	Troy	Good.
519	August 24	J. Dougherty	Troy	Good.
520	August 24	M. Marlow	Troy	Good.
521	August 24	H. O. Dusenbury	Troy	Good.
522	August 24	P. Bernstein	Troy	Good.
558	August 28	E. B. Cox	Troy	Good.
559	August 28	G. M. Murphy	Troy	Good.
560	August 28	Caleb Bird	Troy	Good.
561	August 28	James Hackett	Troy	Good.
562	August 28	P. F. Holton	Troy	Good.
563	August 28	M. Hanley	Troy	Good.
564	August 28	F. Heaton	Troy	Good.
565	August 28	C. H. Watson	Troy	Good.
566	August 28	W. B. Davis	Troy	Good.
567	August 28	T. F. Powers	Troy	Good.
568	August 28	Mrs. P. Marin	Troy	Good.
569	August 28	W. N. English	Troy	Good.
570	August 28	J. A. English	Troy	Good.
571	August 28	Philip Paul	Troy	Good.
572	August 28	James Judge	Troy	Good.
573	August 28	J. H. Stevens	Troy	Good.
574	August 28	O. McChesney & Son	Troy	Good.

Maple Syrup.

A single sample of maple syrup was examined. It was of fair quality.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1189	1891. October 16	W. J. Waterbury	Rochester	Fair.

Black Tea.

Fifty-one samples of black tea called for as such and without specifying quality or price, were examined. They are of varying quality but showed no evidence of adulteration save that one of the samples consisted chiefly of tea dust. No foreign leaves nor excessive amount of mineral or other matter used as facing was detected in any of the samples, a list of which is appended:

Number of sample.	Date of collection.		OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.				
614	September	4	K. Egan	Cohoes	Unadulterated.
615	September	4	P. Slavin	Cohoes	Unadulterated.
616	September	4	A. Bessette	Cohoes	Unadulterated.
715	September	12	D. Hayes	Saratoga Springs	Unadulterated.
716	September	12	Richards & Co.	Saratoga Springs	Unadulterated.
717	September	12	A. F. Mitchell	Saratoga Springs	Unadulterated.
718	September	12	Warner & Van Ness	Saratoga Springs	Unadulterated.
719	September	12	L. Ellsworth	Saratoga Springs	Unadulterated.
720	September	12	J. W. Heaslip	Saratoga Springs	Unadulterated.
721	September	12	H. Palmer	Saratoga Springs	Unadulterated.
722	September	12	C. Van Deusen	Saratoga Springs	Unadulterated.
723	September	12	F. V. Hewitt & Son	Saratoga Springs	Unadulterated.
724	September	12	W. Jennery	Saratoga Springs	Unadulterated.
788	September	18	W. E. Reade	Ballston	Unadulterated.
789	September	18	Cook & Phillips	Ballston	Unadulterated.
790	September	18	R. G. Dye & Co	Ballston	Unadulterated.
791	September	18	H. Butler	Ballston	Unadulterated.
792	September	18	G. S. Brann	Ballston	Unadulterated.
893	September	24	Chas. Moon	Poughkeepsie	Unadulterated.

894	September	24	E. M. Nelson	Poughkeepsie	Unadulterated.
895	September	24	T. Gillard	Poughkeepsie	Unadulterated.
896	September	24	Cheney & Hoyt	Poughkeepsie	Unadulterated.
897	September	24	G. W. Dobbs & Co.	Poughkeepsie	Unadulterated.
898	September	24	E. Grace	Poughkeepsie	Unadulterated.
899	September	24	W. V. Holmes	Poughkeepsie	Unadulterated.
900	September	24	Carpenter & Parkhill	Poughkeepsie	Unadulterated.
901	September	25	L. Carpenter	Poughkeepsie	Unadulterated.
902	September	25	Cornell & Brand	Poughkeepsie	Unadulterated.
903	September	25	J. D. Muldowney	Poughkeepsie	Unadulterated.
904	September	25	Gourley Bros	Poughkeepsie	Unadulterated.
905	September	25	J. J. McCombs	Poughkeepsie	Unadulterated.
906	September	26	J. P. Dickinson	Poughkeepsie	Unadulterated.
907	September	25	Krieger Bros	Poughkeepsie	Unadulterated.
908	September	25	J. B. Bremel	Poughkeepsie	Unadulterated.
909	September	25	C. Meinches	Poughkeepsie	Unadulterated.
910	September	25	Atlantic and Pacific Tea Co	Poughkeepsie	Unadulterated.
911	September	25	L. Theysohn	Poughkeepsie	Unadulterated.
912	September	25	J. Eley	Poughkeepsie	Unadulterated.
913	September	26	H. Sheldon & Co	Hudson	Unadulterated.
914	September	26	G. W. Lamphier	Hudson	Unadulterated.
915	September	26	J. D. Van Deusen	Hudson	Unadulterated.
916	September	26	Groat & Allen	Hudson	Unadulterated.
917	September	26	S. W. Ham	Hudson	Unadulterated.
918	September	26	W. H. Crakser	Hudson	Unadulterated.
919	September	26	D. H. Kennedy	Hudson	Unadulterated.
920	September	26	M. C. Shaver	Hudson	Unadulterated.
921	September	26	W. Sluyter	Hudson	Unadulterated.
922	September	26	J. W. Carlos	Hudson	Unadulterated.
923	September	26	C. N. Guertier	Hudson	Unadulterated.
924	September	26	M. Felts	Hudson	Chiefly tea dust.
925	September	26	E. D. Niver	Hudson	Unadulterated.

Green Tea.

Fifty-three samples of green tea were examined, one sample consisted largely of broken leaves and dust but with this exception all were of good or fairly good quality and free from adulteration, a list of the samples examined is appended:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	where purchased.	Quality.
	1891.			
617	September 4	K. Egan	Cohoes	Unadulterated.
618	September 4	P. Slavin	Cohoes	Unadulterated.
619	September 4	A. Bessette	Cohoes	Unadulterated.
620	September 5	E. St. Jean	Lansingburgh	Unadulterated.
725	September 12	D. Hayes	Saratoga Springs	Unadulterated.
726	September 12	Richards & Co.	Saratoga Springs	Unadulterated.
727	September 12	A. F. Mitchell	Saratoga Springs	Unadulterated.
728	September 12	Warner & Van Ness	Saratoga Springs	Unadulterated.
729	September 12	L. Ellsworth	Saratoga Springs	Unadulterated.
730	September 12	J. W. Heaslip	Saratoga Springs	Unadulterated.
731	September 12	H. Palmer	Saratoga Springs	Unadulterated.
732	September 12	C. Van Deusen	Saratoga Springs	Unadulterated.
733	September 12	F. V. Hewitt	Saratoga Springs	Unadulterated.
734	September 12	W. Jennery	Saratoga Springs	Unadulterated.
783	September 18	W. E. Reade	Ballston	Unadulterated.
784	September 18	Cook & Phillips	Ballston	Unadulterated.
785	September 18	R. G. Dye & Co	Ballston	Unadulterated.
786	September 18	H. Butler	Ballston	Unadulterated.
787	September 18	G. S. Brann	Ballston	Unadulterated.

859	September	24	Chas. Moon	Poughkeepsie	Unadulterated.
860	September	24	E. M. Nelson	Poughkeepsie	Unadulterated.
861	September	24	T. Gillard	Poughkeepsie	Unadulterated.
862	September	24	Cheney & Hoyt	Poughkeepsie	Unadulterated.
863	September	24	J. W. Dobbs & Co	Poughkeepsie	Unadulterated.
864	September	24	E. Grace	Poughkeepsie	Unadulterated.
865	September	24	W. V. Holmes	Poughkeepsie	Unadulterated.
866	September	24	Carpenter & Parkhill	Poughkeepsie	Unadulterated.
867	September	25	L. Carpenter	Poughkeepsie	Unadulterated.
868	September	25	Cornell & Brann	Poughkeepsie	Unadulterated.
869	September	25	J. D. Muldowney	Poughkeepsie	Unadulterated.
870	September	25	Jourley Bros	Poughkeepsie	Unadulterated.
871	September	25	J. J. McCombs	Poughkeepsie	Unadulterated.
872	September	25	J. P. Dickinson	Poughkeepsie	Unadulterated.
873	September	25	Krieger Bros	Poughkeepsie	Unadulterated.
874	September	25	J. B. Bremel	Poughkeepsie	Unadulterated,
875	September	25	C. Meinches	Poughkeepsie	Unadulterated.
876	September	25	Atlantic and Pacific Tea Co	Poughkeepsie	Unadulterated.
877	September	25	L. Theysohn	Poughkeepsie	Unadulterated.
878	September	25	J. Eley	Poughkeepsie	Unadulterated.
879	September	26	H. Sheldon & Co	Hudson	Unadulterated.
880	September	26	S. Stall	Hudson	Unadulterated.
881	September	26	G. W. Lamphier	Hudson	Unadulterated.
882	September	26	J. D. Van Deusen	Hudson	Unadulterated.
883	September	26	Groat & Allen	Hudson	Unadulterated.
884	September	26	S. W. Ham	Hudson	Unadulterated.
885	September	26	W. H. Crapser & Co	Hudson	Unadulterated.
886	September	26	D. H. Kennedy	Hudson	Unadulterated.
887	September	26	M. C. Shaver	Hudson	Unadulterated.
888	September	26	W. Sluyter	Hudson	Unadulterated.
889	September	26	J. W. Carlos	Hudson	Tea dust and broken leaves.

Tea, Green — (*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
	1891.			
890	September 26	C. N. Guertin	Hudson	Unadulterated.
891	September 26	M. Felts	Hudson	Unadulterated.
892	September 26	E. D. Niver	Hudson	Unadulterated.

WATER ANALYSES.

During the year twenty-five samples of water have been examined, as follows:

No. 76. January 27.— Hudson river, 350 feet south of intake pipe of Albany pumping station, and seventy-five feet from the dock. Taken from under the ice. Water high, within a foot of the docks, owing to rains.

No. 77. January 30.— Albany city supply, from laboratory faucet. Bleecker reservoir.

No. 78. February 5.— Intake at Albany pumping station. High water in river.

No. 79. February 5.— Air chamber, Albany pumping station.

No. 80. February 25.— "Well water." Source not stated.

No. 81. June 11.— Cattaraugus water works supply, Cattaraugus, N. Y.

No. 82. July 8.— Well water from Green Island.

No. 83. July 18.— Hudson river, near Castleton, after blast of rock in river bed.

No. 84. July 31.— Reservoir, Little Falls.

No. 85. July 31.— Service pipes, Little Falls.

No. 86. August 1.— Lansingburgh. Source not stated.

No. 88. August 3.— Sandy Hill. Source not stated.

No. 89. August 12.— "Well water." Source not stated.

No. 90. August 27.— Receiving reservoir, Little Falls.

No. 91. August 27.— Distributing reservoir, Little Falls.

No. 92. August 27.— Service pipes, Little Falls.

No. 93. September 3.— Bath-on-the-Hudson. Source not stated.

No. 94. September 3.— Bath-on-the-Hudson. Source not stated.

So small an amount of waters Nos. 93 and 94 was sent that full analyses could not be made.

No. 95. October 17.—Inlet to Owasco lake, Auburn, at Moravia dam, just above village.

No. 96. October 17.—Inlet to Owasco lake, Auburn, below Moravia.

No. 97. October 17.—Inlet to Owasco lake, Auburn, at entrance to lake.

No. 98. October 17.—Owasco lake, Auburn, near head of lake.

No. 99. October 17.—Owasco lake, Auburn, at water-works inlet.

No. 100. October 17.—Owasco lake outlet, below Auburn.

No. 101. December 10.—Well, Middletown.

The results of the analyses of these samples, in tabluar form, are appended. Samples Nos. 76, 77, 78 and 79 are of water supplied Albany in January and February, 1891, viz.: From the Hudson river opposite the city; from the Bleecker reservoir supply, and from the pumping works. The results of the analyses of these four samples are appended:

Analyses of Samples of Water Supplied Albany.

[Results are parts per 100 000.]

	No. 76. Hudson river.	No. 77. Bleecker reservoir supply.	No. 78. Pump well; pumping station.	No. 79. Air chamber. pumping station.
Date taken	January 27, 1891.	January 30, 1891.	February 5, 1891	February 5, 1891.
Color and appearance	Greenish; some sediment.	Greenish; transparent.	Greenish; turbid; considerable sediment	Greenish; turbid; considerable sediment.
Odor at 100 degrees Fahr.	Slight	Slight	Slight	Slight.
Chlorine	0.25.	0.25	0.25	0.25.
Free ammonia	0.0035	0.0029	0.0025	0.0018.
Albuminoid ammonia	0.0105	0.0090	0.0095.	0.0101.
Nitrites	Faint trace	Trace	Faint trace	Faint trace.
Nitrogen in nitrites and nitrates	0.0235	0.0313	0.0379	
Oxygen absorbed (permanganate)	0.3615	0.2715	0.3315	0.3315.
Hardness total	4.71	6.71	6.00	
Total solids	8.20	10.10	9.60	
Loss on ignition	2.60	2.90	2.80	
Behavior on ignition	Little darkening; no odor.	Little darkening; no odor.	Little darkening; no odor.	
Mineral matter	5.60	7.20	6.80	

Other Water Analyses.

[Results parts per 100,000.]

SAMPLE NUMBER.	Color.	Odor.	Chlorine.	Nitrites.	Free ammonia.	Albuminoid ammonia.	Total solids.	Loss on ignition.	Mineral matter.
No. 80	Greenish	Slight	3.10	Decided traces	0.0170	0.0296	40.40	8.40	32.00
No. 81	Yellowish	Slightly unpl'sant.	0.35	None	0.0023	0.0060	9.50	2.80	6.70
No. 82	Opaque; milky	Unpleasant	8.80		0.0025	0.0640	54.20	25.00	29.20
No. 83	Greenish yellow	Slight	0.38	Largely present	0.0145	0.0243	18.40	5.00	13.40
No. 84	Slightly yellowish	Slight	0.10	None	0.0065	0.0090	12.40	4.40	8.00
No. 85	Yellowish	Slight	0.10	None	0.0095	0.0155	13.10	2.90	10.20
No. 86	Yellowish	Slight	0.20	Trace	0.0060	0.0160	14.40	5.00	9.40
No. 88	Yellowish	None	46.00	Present	0.0040	0.0190	380.60	191.10	189.50
No. 89	Colorless	Slight	1.30	Decided traces	0.0020	0.0135	12.80	7.00	5.80
No. 90	Yellowish green	None	0.10	Faint trace	0.0095	0.0125	14.00	5.00	9.00
No. 91	Light greenish	None	0.10	Faint trace	0.0110	0.0100	14.20	4.20	10.00
No. 92	Light greenish	None	0.10	Faint trace	0.0165	0.0100	14.00	5.00	9.00
No. 95	Light yellowish	None	0.38	None	0.0140	0.0090	17.00	2.00	15.00
No. 96	Yellowish	None	0.42	None	0.0180	0.0110	17.60	2.40	15.20
No. 97	Almost colorless	Slight	0.59	None	0.0100	0.0060	20.60	3.60	17.00
No. 98	Almost colorless	None	0.42	Trace	0.0120	0.0090	17.00	3.60	18.40
No. 99	Almost colorless	None	0.38	Trace	0.0060	0.0060	16.00	3.00	13.00
No. 100	Slightly yellowish	Unpleasant	0.91	Decided traces	0.1890	0.0320	18.00	4.00	14.00
No. 101	Light greenish	Disagreeable	3.40	Trace	0.0030	0.0050	34.20	14.30	19.90

Conclusion.

During the past year the food and drug work of the Board has been greatly extended as shown by the present report. New territory has been covered; a much larger number of samples collected and examined than ever before, and food articles, as well as drugs collected for the first time in several years. It is believed that the work which has been done has been productive of much good and has had an important effect more particularly in improving the quality of the drugs sold throughout the State. The work continues to receive the approval of leading manufacturers and dealers and of the pharmaceutical and medical journals and associations. It is advised that the work be continued during the ensuing year upon essentially the same plan as that pursued during the past six months. With a larger appropriation, a corps of trained assistants and a well-equipped laboratory, devoted to this work exclusively, an immense amount of chemical work might be done, and extended investigations made in many directions in matters pertaining to sanitary science and to public health. The water supply of the State, a subject of vital importance in every community and to every citizen, is now receiving the attention of the Board, but in order that we may deal properly with this subject alone, increased facilities for carrying on the chemical work are needed. It is hoped that the work which has been done during the past year and which we expect to accomplish during the year ensuing, may commend itself to the people of the State, awaken a greater interest in sanitary science and eventually lead to the establishment of a State laboratory, suitably equipped and provided for, in which a very much larger amount of work of even greater value may be done than, with our present appropriation and facilities, we have been able to accomplish in the past.

Respectfully submitted.

WILLIS G. TUCKER,
Director State Laboratory.

Albany, N. Y., *January* 1, 1892.

Sanitary Condition of the State and Summary of Mortality Reported During the Year.

With the exception of the city of Dunkirk and the towns of Bombay, Franklin county; Catharine, Schuyler county; Clarkson, Monroe county; Clymer and French Creek, Chautauqua county; Diana, Lewis county; Italy, Yates county; New Hudson, Allegany county; Orwell and Parish, Oswego county; Otisco, Onondaga county; Russia, Herkimer county, and South Valley, Cattaraugus county, returns of mortality and reports of prevalent diseases have been received from every one of the thirty-two cities and 938 towns of the State. The population of Dunkirk is 9,416, and that of the thirteen sparsely inhabited towns, 19,400. The reported mortality therefrom represents that of a population, according to the last census, of 5,970,000.

During the year ending with November, 1891, the number of deaths reported in the monthly bulletins is 121,398. Besides these there have been received the reports of 4,173 deaths which were sent too late to be included in the bulletins, making the number of deaths for the year 125,571. This makes an annual death rate of twenty-one per thousand inhabitants. If, instead of the population of the last census, there be taken the estimated population of some of the larger cities, which would add about 225,000, the death rate would be reduced to 20.25 per thousand inhabitants for the year. The death rate for 1890 was estimated at 19.65 per thousand inhabitants for the year.

The average number of deaths daily during the year was 332; in 1890 it was 320; in 1889 it was 286; in 1888 it was 286; in 1887 it was 264, and in 1886 it was 238; for the past six years the daily average mortality is about 300. A comparison by population can not be made for the several years for lack of exact knowledge as to the population reporting. Returns were less complete during the preceding years, which in part accounts for the smaller number of deaths.

For the sake of allowing a comparison in detail, month by month, with preceding years, the following table has been prepared, giving the number of deaths and their causes for 1889, 1890 and 1891:

MORTALITY OF THE STATE

TOTALS OF MORTALITY OF THE

MONTHS.	Total number of deaths.	Representing average daily death rate of—	Deaths under five years.	Percentage of deaths under five years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.
1887.											
December	7,888	254	2,497	31.6	190.00	37	104	78	12	204	44
1888.											
January.........	8,742	282	2,848	32.5	176.75	37	64	71	21	265	55
February........	8,637	298	2,748	32.0	154.00	44	84	49	10	239	55
March.	9,550	308	2,849	30.0	147.37	55	81	58	35	239	58
April	8,129	271	2,468	30.0	150.00	75	45	52	40	250	77
May	9,032	291	2,891	32.1	141.75	62	59	68	42	277	100
June.............	8,368	279	3,306	39.7	227.34	40	45	56	11	233	139
July	10,300	332	5,363	52 0	380.60	35	78	51	2	141	111
August	10,017	323	4,867	48.7	345.82	29	174	87	6	120	73
September	8,433	281	3,877	45.9	294.32	31	279	102	12	114	43
October	7,886	254	2,522	32.0	196.37	33	288	109	12	125	43
November	6,987	233	2,111	30.2	174.88	21	153	61	8	171	52
Totals	103,969	285	38,347	36.5	216.00	499	1,449	842	211	2,378	855

TOTALS OF MORTALITY OF THE

MONTHS.	Total number of deaths.	Representing average daily death rate of—	Deaths under five years.	Percentage of deaths under five years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.
1888.											
December	8,369	269	2,495	29.8	179.00	28	138	49	13	278	138
1889.											
January.........	8,437	270	2,983	35.2	170.32	35	89	51	15	242	164
February........	8,183	292	2,933	35 8	170.00	32	71	30	9	324	136
March	9,547	308	3,381	35.4	167.50	43	69	47	1	386	150
April	9,078	303	3,116	34.5	174.20	45	78	64	2	363	148
May	8,357	270	2,773	33.2	155.91	42	63	37	....	276	108
June	8,370	279	3 632	43.4	241.82	27	45	59	....	154	64
July	10,806	349	5,563	51.4	352.20	46	117	61	1	69	33
August	9,373	302	4,059	40.7	280.75	33	224	96	....	54	22
September	8,264	275	3,179	38.4	234.26	19	247	98	2	53	9
October	8,050	260	2,288	28.4	177.00	21	261	87	....	57	7
November	7,285	243	2 025	27.7	139.60	21	169	63	....	56	25
Totals	104,119	285	38,427	36.8	210.34	392	1,571	742	43	2,312	1,004

TOTALS OF MORTALITY OF THE

MONTHS.	Total number of deaths.	Representing average daily death rate of—	Deaths under five years.	Percentage of deaths under five years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.
1889.											
December	8,483	274	2,311	27.4	126.35	38	117	53	....	73	33
1890.											
January	13,020	420	2,227	18.2	89.70	29	117	62	....	93	42
February........	9,130	326	2,370	27.5	118.00	37	94	39	....	96	50
March	9,844	318	2,772	30.0	117.35	47	72	36	2	90	94
April	9,488	316	2,826	31.8	121.42	51	73	43	1	78	187
May	9,194	297	2,740	31.6	130.95	62	72	55	....	60	200
June	9,185	306	3 515	40.2	217.70	28	69	63	1	68	161
July	11,606	374	5,602	50.5	327.37	56	101	56	....	45	91
August...........	10,642	343	4,480	48.8	292.70	49	167	86	....	35	69
September	9,111	304	3,356	39.0	224.45	30	234	84	....	40	29
October..........	8,640	279	2,665	32.7	155.00	26	240	87	....	62	47
November	8,309	274	2,199	28.5	146.00	29	216	68	....	102	74
Totals	118,552	325	37,063	31.2	164.80	482	1,572	782	4	832	1,077

FOR FIVE YEARS, BY MONTHS.

State by Months for 1888.

Erysipelas.	Whooping cough.	Croup and diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
35	21	883	78	1,205	1,022	75	441	408	543	798	208	295	761	636
35	40	879	78	1,563	1,089	105	481	412	553	916	203	278	882	715
39	49	647	85	1,644	1,112	105	437	434	563	878	193	233	1,042	674
48	48	682	109	1,762	1,238	138	450	423	608	991	204	292	1,096	935
34	48	448	113	1,332	1,117	90	407	404	549	966	168	265	738	890
50	49	627	131	1,438	1,195	98	458	481	570	1,009	211	370	738	988
25	61	490	811	778	868	94	516	393	491	1,075	237	411	472	1,130
23	108	411	2,957	588	966	73	784	383	492	930	210	397	454	1,111
9	144	345	2,465	528	959	74	647	402	478	1,010	227	370	580	1,347
11	142	308	1,440	649	895	69	600	343	494	895	198	303	510	995
19	102	432	386	1,031	1,034	70	518	392	495	791	232	278	512	984
16	90	538	112	1,051	893	58	414	398	522	796	164	300	443	726
344	902	6,710	8,765	13,569	12,388	1,049	6,153	4,873	6,353	11,055	2,473	3,792	8,178	11,129

State by Months for 1889.

33	113	621	87	1,392	1,017	95	434	461	584	917	232	345	577	817
29	105	606	101	1,473	1,061	77	421	469	577	946	194	279	507	896
30	119	563	75	1,447	947	100	401	461	574	922	183	256	507	895
33	157	590	115	1,840	1,195	109	468	488	662	1,004	228	237	624	1,092
47	187	589	122	1,656	1,092	125	429	478	574	986	222	311	590	1,029
40	121	492	123	1,172	1,102	86	511	421	599	951	227	377	548	1,061
20	120	423	1,112	744	919	77	639	386	485	951	222	376	414	1,133
14	112	305	3,092	537	1,012	63	844	449	542	1,029	227	357	502	1,394
10	133	327	1,901	591	1,026	63	680	437	540	936	254	373	477	1,196
14	90	343	1,094	646	949	65	638	794	483	870	206	326	446	872
13	70	570	339	959	1,016	64	557	531	595	890	238	343	491	1,032
21	55	501	110	1,133	944	67	450	452	590	822	199	311	419	868
304	1,332	5,930	8,271	13,590	12,280	991	6,472	5,727	6,814	11,233	2,632	3,901	6,102	12,386

State by Months for 1890.

22	84	546	110	1,631	1,131	83	461	466	657	949	240	288	455	1,046
30	114	534	98	3,847	1,801	95	542	553	724	1,107	277	333	653	1,969
22	92	518	82	1,950	1,304	74	477	415	556	927	209	264	515	1,399
47	110	514	94	1,929	1,238	99	511	471	709	1,051	235	314	520	1,663
43	77	436	97	1,781	1,138	75	599	484	691	1,046	220	330	460	1,578
34	68	420	142	1,538	1,077	95	539	508	691	999	273	371	436	1,554
29	90	364	1,087	972	984	83	679	497	541	1,000	237	452	347	1,433
12	133	293	2,916	706	1,073	60	1,024	497	543	1,092	242	553	395	1,718
11	153	233	2,192	666	1,064	70	871	442	537	1,125	236	512	375	1,749
15	102	247	1,196	710	1,027	47	768	418	520	871	236	375	450	1,712
6	84	382	360	1,001	1,061	71	635	485	597	884	238	366	470	1,538
17	62	467	124	1,207	1,019	74	518	435	554	851	208	387	409	1,388
298	1,169	4,954	8,498	17,938	13,817	926	7,624	5,671	7,320	11,902	2,851	4,545	5,485	18,747

MORTALITY OF THE STATE

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April	8,129	271	2,468	30.0	150.00	75	45	52	40	250	77
May	9,032	291	2,891	32.1	141.75	62	59	68	42	277	100
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January	13,026	420	2,227	18.2	89.70	29	117	62	....	93	42
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April	9,488	316	2,826	31.8	121.42	51	73	43	1	78	187
May	9,194	297	2,740	31.6	130.95	62	72	55	....	60	200
June	9,185	306	3 515	40.2	217.70	28	69	63	1	68	161
July	11,606	374	5.602	50.5	327.37	56	101	56	....	45	91
August	10,642	343	4,480	48.8	292.70	49	167	86	....	35	69
September	9,111	304	3,356	39.0	224.45	30	234	84	....	40	29
October	8,640	279	2,665	32.7	155.00	26	240	87	....	62	47
November	8,209	274	2,199	28.5	146.00	29	216	68	....	102	74
Totals	118,552	325	37,063	31.2	164.80	482	1,572	732	4	832	1,077

FOR FIVE YEARS, BY MONTHS.

STATE BY MONTHS FOR 1888.

Erysipelas.	Whooping cough.	Croup and diphtheria.	Diarrhoeal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhoeal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
35	21	883	78	1,205	1,022	75	441	408	543	798	208	295	761	636
35	40	879	78	1,563	1,089	105	481	412	553	916	203	278	882	715
39	49	647	85	1,644	1,112	105	437	434	563	878	193	233	1,042	674
48	48	682	109	1,762	1,238	138	450	423	608	991	204	292	1,096	935
34	48	448	113	1,332	1,117	90	407	404	549	966	168	265	738	890
50	49	627	131	1,438	1,195	98	458	481	570	1,009	211	370	738	988
25	61	490	811	778	868	94	516	393	491	1,075	227	411	472	1,130
23	108	411	2,957	588	966	73	784	383	492	930	210	397	454	1,111
9	144	345	2,465	528	959	74	647	402	473	1,010	227	370	580	1,347
11	142	308	1,440	649	895	69	600	343	494	895	198	303	510	995
19	102	432	386	1,031	1,034	70	518	392	495	791	232	278	512	984
16	90	538	112	1,051	893	58	414	398	522	796	164	300	443	726
344	902	6,710	8,765	13,569	12,388	1,049	6,153	4,873	6,353	11,055	2,473	3,792	8,178	11,129

STATE BY MONTHS FOR 1889.

Erysipelas.	Whooping cough.	Croup and diphtheria.	Diarrhoeal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhoeal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
33	113	621	87	1,392	1,017	95	434	461	584	917	232	345	577	817
29	105	606	101	1,473	1,061	77	421	469	577	946	194	279	507	896
30	119	563	75	1,447	947	100	401	461	574	922	183	256	507	896
33	157	590	115	1,840	1,195	109	468	488	662	1,004	228	237	624	1,092
47	137	589	122	1,656	1,092	125	429	478	574	986	222	311	590	1,029
40	121	492	123	1,172	1,102	86	511	421	599	951	227	377	548	1,061
20	120	423	1,112	744	919	77	639	386	485	951	222	376	414	1,133
14	112	305	3,092	537	1,012	63	844	449	542	1,029	227	357	502	1,394
10	133	327	1,901	591	1,026	63	680	437	540	986	254	373	477	1,196
14	90	343	1,094	646	949	65	638	794	483	870	206	326	446	872
13	70	570	339	959	1,016	64	557	531	595	899	233	343	491	1,032
21	55	501	110	1,133	944	67	450	452	599	822	199	311	419	868
304	1,332	5,930	8,271	13,590	12,280	991	6,472	5,727	6,814	11,223	2,632	3,901	6,102	12,336

STATE BY MONTHS FOR 1890.

Erysipelas.	Whooping cough.	Croup and diphtheria.	Diarrhoeal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhoeal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
22	84	546	110	1,631	1,131	83	461	466	657	949	240	288	455	1,046
30	114	534	98	3,847	1,801	95	542	553	724	1,107	277	333	653	1,969
32	92	518	82	1,950	1,304	74	477	415	556	927	209	264	515	1,399
47	110	514	94	1,929	1,238	99	511	471	709	1,051	235	314	520	1,663
43	77	436	97	1,781	1,138	75	599	484	691	1,046	220	330	460	1,578
34	68	420	142	1,538	1,077	95	539	508	691	999	273	371	436	1,554
29	90	364	1,087	972	984	83	679	497	541	1,000	237	452	347	1,433
12	133	293	2,916	706	1,078	60	1,024	497	543	1,092	242	553	395	1,718
11	153	233	2,192	666	1,064	70	871	442	537	1,125	236	512	375	1,749
15	102	247	1,196	710	1,027	47	768	418	520	871	236	375	450	1,712
6	84	382	360	1,001	1,061	71	635	485	597	884	238	366	470	1,538
17	62	467	124	1,207	1,019	74	518	435	554	851	208	387	409	1,388
298	1,169	4,954	8,498	17,938	13,817	926	7,624	5,671	7,320	11,902	2,851	4,545	5,485	18,747

MORTALITY OF THE

TOTALS OF MORTALITY OF THE

MONTHS.	Total number of deaths.	Representing daily average death rate of—	Deaths under five years.	Percentage of deaths under five years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.
1890.											
December	8,761	283	2,635	30.0	136.00	30	157	59	....	144	117
1891.											
January	9.540	308	2,868	30.0	132.50	47	138	44	1	182	140
February	8 704	311	2,813	32.5	141.75	41	127	32	...	203	127
March	10,672	344	3.118	29.2	115.30	63	121	42	....	195	157
April	13,981	466	3.809	27.3	92.85	67	103	48	1	273	159
May	10.213	329	2,917	28.6	117.45	57	88	35	....	252	184
June	9,321	311	3,715	38.8	186.80	42	80	46	....	207	183
July	11,870	367	5 782	50 8	220.72	57	97	44	....	181	98
August	10,720	346	4,829	35.0	207.12	38	171	67	....	120	41
September	9,662	322	3,984	41.2	247.04	59	287	83	....	99	21
October	6 718	217	3,454	35.5	200.00	47	290	70	....	118	36
November	8,727	291	2,528	29.0	151.06	39	241	61	2	179	31
Totals	122,398	335	42,332	34.5	177.50	687	1,900	631	4	2,173	1,239

STATE — (*Continued*).

STATE BY MONTHS FOR 1891.

Erysipelas.	Whooping cough.	Croup and diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
36	71	497	80	1,756	1,045	85	533	483	643	1,000	257	285	454	1,029
30	92	489	103	1,761	1,210	81	533	548	737	1,041	220	288	523	1,251
58	81	419	121	1,683	985	107	517	522	672	1,003	205	290	504	1,007
40	104	413	101	2,307	1,318	112	613	611	771	1,165	283	290	696	1,270
42	106	370	122	4,457	1 377	92	596	645	869	1,348	271	418	901	1,816
37	79	339	127	2 129	1,234	114	561	555	741	1,021	248	434	629	1 349
41	65	319	808	1,098	978	103	720	479	678	1,127	224	534	353	1,286
19	48	304	2 906	717	1,032	67	1,036	502	652	1,158	239	458	363	1,397
14	64	266	2.405	675	1,041	87	925	480	612	1,133	257	617	477	1,235
13	60	334	1,434	720	1,039	65	924	479	596	997	289	449	421	1,293
14	54	527	794	1,012	1,124	60	832	558	695	1,023	259	430	494	1,281
26	31	567	143	1,507	1,017	65	583	501	656	967	237	404	437	1,033
370	835	4,844	9,143	19,722	13,500	1,038	8,073	6,363	9,322	12,983	2,989	4,797	6,252	15,247

Mortality for Different Seasons.

It has been found to be an invariable fact so far back as the records of this Board have been carried that November is the healthiest month in the year in this State. The year 1891 was not an exception to this rule. The average daily rate of mortality in November was 291, that of the preceding ten months being 338. For the past six years November has shown an average daily mortality that is less by twenty-five deaths per day than the daily average for the entire period. On the other hand, July has almost without exception been the month of highest death rate, and in July of 1891 the daily mortality rose to 367, or seventy-six more than in November.

The ordinary course of events, which may be seen as shown in the number of deaths month by month in 1889 in the foregoing table, has not been followed in either 1890 or 1891. In the former, it is seen that the mortality in January is far in excess of the ordinary, and in April, 1891, the mortality rises to the extraordinary rate of 463 deaths daily, the months preceding and following it also showing high rates. The perturbing causes for these deviations are traceable to the outbreaks of epidemic influenza.

To show the relative healthfulness of the different seasons, for different years, this table has been prepared. It shows the actual and relative mortality for the seasons for several years, for comparison with that of 1891. It is also made to include the proportion of deaths during these periods in early life and from zymotic diseases.

COMPARATIVE MORTALITY FOR THE FOUR SEASONS.

	Total number of deaths.	Percentage of the total mortality for the year.	Percentage of deaths under 5 years of age.	Zymotic deaths per 1,000 deaths from all causes.	Deaths from consumption per 1,000 deaths from all causes.
1888.					
In the winter months	25,267	24.39	32.00	177.36	127.55
In the spring months	26,711	25.69	31.00	146.97	132.90
In the summer months...	28,865	27.58	46.83	317.72	97.40
In the fall months.......	23,306	22.41	36.00	221.86	121.12
Average...........	103,969	25.01	36.46	220.80	120.00
1889.					
In the winter months	24,889	23.92	33.60	173.73	121.53
In the spring months....	26,982	25.93	34.36	166.33	125.60
In the summer months...	28,549	27.44	45.16	303.47	103.57
In the fall months.......	23,600	22.68	31.50	187.12	123.26
Average	104,020	24.99	38.65	207.66	118.49
1890.					
In the winter months	29,435	26.63	23.42	108.50	141.13
In the spring months	26,811	24.25	31.14	120.78	124.75
In the summer months...	29,817	26.97	45.60	283.70	100.00
In the fall months.......	24,460	22.13	33.60	176.00	123.45
Average	110,523	24.99	33.70	173.65	122.00
1891.					
In the winter months....	25,962	21.57	30.40	140.75	122.50
In the spring months....	34,866	28.97	28.20	108.53	114.27
In the summer months...	31,411	25.27	48.20	271.21	97.13
In the fall months.......	28,107	23.35	38.60	199.37	109.58
Average	120,346	24.79	36.35	179.96	110.89

Infant mortality.— Of the deaths which occurred during the year 34.9 per cent occurred under the age of 5 years. The average for the five years preceding was 35.8. In 1890 the infant death rate was very low being only 31.2; for the years before that it has never been less than 36.3. The past two years have been marked by low comparative mortality in early life. The reasons for this, which are to be looked for in the variable prevalence either of diseases fatal to young children or on the other hand of those fatal to more advanced life, will be made mention of later in this summary of prevailing causes of death during the year.

Comparative Mortality in the Sanitary Districts.

Because of its size and the varying conditions affecting sanitary affairs the State has been divided into eight sanitary districts, and record of the mortality of each has been kept and published in the monthly bulletins.

The Maritime district includes New York, Brooklyn, Long Island, Staten Island and Westchester county; it is made up almost wholly of an urban population and includes all of the State that is in proximity to the ocean. The Hudson Valley district takes in the counties bordering the Hudson river, and contains numerous cities of medium size, as well as a fairly well populated agricultural country. The Adirondack and Northern district includes a large section of the State north of the Mohawk; it contains much wilderness and sparsely settled country. The Mohawk Valley district is a populous manufacturing and agricultural district along the line of the Mohawk river. The Southern Tier district contains the counties along the southern border of the State and has considerable areas that are sparsely settled, while it also has numerous large villages along the Erie railroad. The East Central and West Central districts include all the central counties of the State, and are composed mostly of an agricultural region. The Lake Ontario and Western district has in its limits the large cities of Buffalo and Rochester and all the counties lying along the great lakes.

The following table has been prepared to show the comparative mortality in these different districts, and that of 1891 as compared with the average of the preceding five years. It also shows the relative prevalence of different diseases in the urban portions of the State, the cities and large villages being included under "specified localities," and under "rest of district" the portions of the State not separately noted in the bulletins and consisting of sparsely settled rural towns, are included.

COMPARATIVE MORTALITY BETWEEN 1891 AND THE FIVE YEARS

MOHAWK VAL

Specified

	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Small pox.	Scarlet fever.	Measles.	Erysipelas.
Deaths in 1891..........	3,567	912	25.5	159.51	15	103	17	0	43	17	6
Average for 1886-90....	2,878	802	27.8	197.35	26	67	45	0	34	12	5
Rest of											
Deaths in 1891..........	2,411	398	16.5	116.13	10	63	6	0	49	9	7
Average for 1886-90....	1,560	281	11.6	126.27	8	36	5	0	9	5	5
SOUTHERN TIER											
Total											
Deaths in 1891..........	4,648	839	18.0	127.60	22	132	10	7	34	32	7
Average for 1886-90 ...	2,977	630	21 1	193.81	19	82	29	0	26	21	9
Specified											
Deaths in 1891..........	2,342	554	23.6	186.16	15	79	10	1	16	7	2
Average for 1886-90 ...	1,681	411	24.4	221.29	10	54	16	0	13	14	5
Rest of											
Deaths in 1891..........	2,306	285	12.3	111.44	7	53	0	0	18	25	5
Average for 1886-90 ...	1,296	219	16.8	158.17	9	28	13	0	18	7	4
EAST CEN											
Total											
Deaths in 1891..........	5,113	1,066	20.8	137.10	28	135	24	0	25	19	14
Average for 1886-90 ...	3,942	819	20.7	165.93	22	91	34	3	33	23	10
Specified											
Deaths in 1891..........	2,474	695	28.0	133.79	20	78	15	0	5	9	8
Average for 1886-90 ...	2,084	581	27.8	200.08	20	46	21	1	19	15	7
Rest of											
Deaths in 1891..........	2,639	371	14.1	90.90	8	57	9	0	20	10	6
Average for 1886-90 ...	1,859	238	12.8	122.10	12	45	13	2	14	8	3
WEST CEN											
Total											
Deaths in 1891..........	4,040	519	12.8	88.61	18	72	11	2	30	10	11
Average for 1886-90 ...	2,776	453	16.3	121.03	15	49	21	1	15	15	8
Specified											
Deaths in 1891..........	1,510	227	15.0	102.64	10	30	6	0	7	3	5
Average for 1886-90 ...	1,224	257	20.9	147.05	9	23	15	0	8	10	4

PRECEDING, IN THE SANITARY DISTRICTS — (*Continued*).

LEY DISTRICT — (*Continued*).

Whooping cough.	Croup and diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of the circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
Localities.													
17	121	230	505	424	24	264	189	294	498	114	129	299	272
17	202	201	316	353	24	177	113	223	376	99	114	263	206
District.													
13	67	85	308	222	20	181	108	230	273	80	101	395	166
6	46	78	152	162	10	124	t2	133	142	58	68	345	102
DISTRICT.													
Deaths.													
12	195	248	651	412	36	377	177	415	566	151	233	549	378
22	108	271	331	258	35	216	97	227	340	106	158	404	268
Localities.													
8	143	155	315	244	22	203	77	171	305	79	120	195	166
16	68	176	187	139	22	119	48	126	180	57	110	147	175
District.													
4	52	93	336	168	14	174	100	244	261	72	113	354	212
	40	95	143	119	13	97	49	101	160	49	43	257	93
TRAL DISTRICT.													
Deaths.													
17	89	350	612	546	88	380	275	431	616	172	214	717	411
27	135	276	437	452	52	247	146	334	427	140	171	619	285
Localities.													
8	58	130	292	312	16	171	128	178	282	80	112	257	228
13	81	204	247	271	32	117	68	177	245	72	96	201	149
District.													
9	31	120	320	234	22	209	147	253	334	92	102	460	183
14	54	72	190	181	19	130	78	157	182	68	85	418	136
TRAL DISTRICT.													
Deaths.													
15	36	153	443	428	32	312	204	430	529	169	184	639	322
13	65	134	268	319	23	184	123	224	333	99	119	531	214
Localities.													
4	21	69	178	204	9	105	80	136	184	53	69	186	147
7	38	66	127	150	10	101	54	96	154	37	52	171	104

COMPARATIVE MORTALITY BETWEEN 1891 AND THE FIVE YEARS

WEST CENTRAL

Rest of

	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.	Erysipelas.
Deaths in 1891..........	2,530	292	11.5	80.23	8	42	5	2	23	7	6
Average for 1886-90 ...	1,552	196	12.6	104.38	6	26	4	1	7	5	4

LAKE ONTARIO AND

Total

	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.	Erysipelas.
Deaths in 1891..........	12,988	4,270	32.8	175.16	91	306	67	0	126	79	35
Average for 1886-90 ...	9,676	3,329	34.4	197.70	82	199	72	11	88	57	28

Specified

	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.	Erysipelas.
Deaths in 1891..........	9,990	3,721	37.2	180.78	78	231	50	0	103	64	32
Average for 1886-90 ...	7,721	2,974	38.5	207.78	72	152	56	10	72	44	23

Rest of

	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.	Erysipelas.
Deaths in 1891..........	2,998	549	18.3	120.08	13	75	17	0	23	15	3
Average for 1886-90 ...	1,955	355	18.1	147.82	10	47	16	1	16	13	5

Preceding in the Sanitary Districts — (*Concluded*).

DISTRICT — (*Continued*).

District.

Whooping cough.	Croup and diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
11	15	84	265	224	23	207	124	294	335	116	115	453	175
6	27	68	136	169	13	82	69	127	179	62	67	360	110

WESTERN DISTRICT.

Deaths.

Whooping cough.	Croup and diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
54	556	961	1,989	1,847	119	1,000	560	868	1,598	892	596	816	1,684
55	427	874	1,013	1,026	82	660	305	597	1,261	272	515	743	1,200

Localities.

Whooping cough.	Croup and diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
37	504	807	1,584	1,049	96	763	447	605	1,290	256	464	398	1,396
45	369	761	823	818	64	510	239	453	1,065	188	367	349	1,052

District.

Whooping cough.	Croup and diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
17	52	154	405	298	23	237	113	253	308	136	182	418	308
10	58	113	190	207	18	150	66	144	196	84	148	394	148

The Zymotic Mortality of 1891.

Ordinarily on this depends the relative healthfulness of the State. In order to show at a glance the proportion of deaths from the commonly accepted zymotic diseases the following table has been prepared, which will show the proportion of deaths from these causes for 1891 and the six years preceding, and also their relative prevalence for the four seasons of the year. It is to be noted, however, that the computation does not include the mortality from epidemic influenza, which fact should be borne in mind in noting the proportion given by zymotic deaths in the winter of 1890 and in the spring of 1891, during which periods it prevailed, and for reasons to be given not being included under zymotic mortality, it operates to largely lower the ratio as given of zymotic deaths:

In each 1,000 deaths there were from zymotic diseases:

YEAR	Winter.	Spring.	Summer.	Autumn	Entire year.
In 1885	135.85	144.44	325.74	209.05	222.17
In 1886	161.51	142.70	294.18	237.46	217.23
In 1887	177.30	167.05	338.66	220.93	227.80
In 1888	177.36	146.97	317.72	221.96	220.80
In 1889	173.77	166.47	303.47	187.12	207.66
In 1890	105.05	117.93	216.48	176.65	175.00
In 1891	135.61	105.11	276.28	236.95	178.80

In some respects a similarity is noted between the relative mortality as shown by this table in 1891 and 1890. The proportion for the winter months in 1890 is almost the same as that for the spring months in 1891 and the proportion for the entire year varies but little for the two years. Both show a much lower relative zymotic mortality for the two years than is found during the years preceding.

Taking the zymotic diseases in detail another table is prepared which shows the percentage to the total mortality of each of the zymotic diseases for 1891 and the six years preceding during the four seasons:

PERCENTAGE OF DEATHS FROM EACH ZYMOTIC DISEASE TO THE TOTAL ZYMOTIC MORTALITY, BY SEASONS, FOR SEVEN YEARS.

Winter.

YEARS.	Total zymotic diseases.	Total per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Diphtheria.	Diarrhœal diseases.
1885..................	3,306	135.85	3.5	7.4	6.4	....	11.0	13.5	3.2	4.9	41.9	8.7
1886..................	3,265	161.51	3.1	5.6	5.5	0.5	11.3	1.4	3.3	12.0	47.6	7.2
1887..................	3,882	177.30	3.9	6.3	5.0	1.2	6.5	24.0	2.5	4.0	39.1	7.1
1888..................	4,077	177.36	2.5	7.4	4.4	1.0	16.5	4.0	2.2	2.6	51.1	6.8
1889..................	4,324	173.73	2.1	6.8	3.0	0.8	19.5	10.1	2.1	7.7	41.3	6.0
1890..................	3,192	105.00	3.2	10.0	4.7	....	8.2	3.9	2.6	9.0	49.0	9.0
1891..................	3,599	138.62	3.2	11.7	3.7	....	14.9	10.6	3.4	6.7	39.0	9.6

Spring.

YEARS.	Total zymotic diseases.	Total per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Diphtheria.	Diarrhœal diseases.
1885..................	3,130	144.44	4.0	5.9	7.0	....	12.7	17.1	4.6	5.4	31.9	11.3
1886..................	3,110	142.70	5.8	6.1	7.3	0.6	11.7	2.9	4.4	11.0	40.7	9.3
1887..................	3,899	167.05	3.8	4.2	5.0	2.0	8.3	9.2	3.3	2.7	38.9	22.5
1888..................	4,074	146.97	4.7	4.5	4.4	2.6	18.8	6.0	3.2	3.5	43.1	8.7
1889..................	4,488	166.33	2.6	4.6	3.2	....	22.8	9.0	2.6	9.2	37.2	8.0
1890..................	3,363	117.90	4.7	6.4	4.0	....	8.5	14.5	3.7	7.6	40.7	10.0
1891..................	3,695	100.24	5.0	8.4	3.3	....	19.4	13.5	3.2	8.3	30.3	9.5

PERCENTAGE OF DEATHS FROM EACH ZYMOTIC DISEASE TO TOTAL ZYMOTIC MORTALITY, ETC. — (*Concluded*).

Summer.

YEARS.	Total zymotic diseases.	Total per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Diphtheria.	Diarrhœal diseases.
1885	7,663	325.74	1.6	2.8	3.5	....	3.3	3.3	0.8	3.2	11.2	70.1
1886	7,027	294.18	2.1	3.1	2.5	....	2.3	2.6	0.7	5.3	15.3	66.3
1887	9,174	337.66	1.6	3.8	2.5	0.3	2.5	1.4	0.6	1.5	12.5	73.0
1888	9,267	317.72	1.1	3.1	2.1	0.2	5.3	3.4	0.6	3.4	13.5	67.2
1889	8,674	305.47	1.2	4.4	2.4	....	3.1	1.3	0.5	4.2	12.1	70.3
1890	8,454	216.40	1.5	3.9	2.4	....	1.7	3.7	0.6	4.3	10.4	71.4
1891	8,776	279.39	1.5	3.8	1.8	....	5.7	3.0	0.8	2.0	10.1	70.8

Autumn.

YEARS.	Total zymotic diseases.	Total per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Diphtheria.	Diarrhœal diseases.
1885	3,751	209.05	2.2	11.2	7.1	0.5	4.5	0.9	1.2	5.6	32.5	34.2
1886	4,725	237.46	2.5	11.1	6.1	....	3.3	5.6	1.2	5.0	34.2	30.6
1887	5,076	220.93	2.1	11.5	6.5	0.4	6.5	1.2	1.0	1.5	42.2	28.0
1888	5,153	221.86	1.6	14.0	5.3	0.6	8.0	2.5	0.7	6.5	23.0	37.6
1889	3,415	187.12	1.7	19.8	7.2	....	4.8	1.2	1.4	6.2	41.4	45.1
1890	4,326	170.60	2.0	15.4	5.4	....	4.6	3.5	0.9	5.7	24.2	38.0
1891	5,660	201.38	2.5	14.4	3.8	....	6.9	1.5	0.9	2.5	25.2	41.9

Epidemic Influenza (Grippe).— This disease, to which reference had heretofore been made, has been the most remarkable of epiedmics which has occurred in the sanitary history of this State. None has occurred which has been so widespread in its influences or attended with so great mortality. Making its first appearance a very short time before the commencement of 1890, it developed almost simultaneously over the entire State and caused in January of that year a very large increase in the death rate, the total number of deaths being 5,000 greater than the average for that month for the five years preceding. How many of these were attributable to this disease it is not possible to say with accuracy. Any attempt to actually enumerate the mortality from this disease would be exceedingly difficult. As a matter of fact comparatively few deaths have been returned as due to this cause alone. It is left as a matter of inference to state the influence which it had upon the death rate. Not less than 5,000 deaths occurred during the months of January, February, March and April of 1890 which can not be accounted for except as being due to epidemic influenza.

In 1891 this disease reappeared in the early part of the year. Its onset was very different from that of the year before, when the whole area of the State was practically affected simultaneously. It came on gradually, being noted here and there. It also took hold upon the community less acutely. It was reported as prevalent in the western States a considerable time before its presence was appreciated here. It seems probable that it occurred here and there as early as January; at any rate it was occasionally given as a cause of death, and there were 800 more deaths than in the month preceding, although there were 3,000 less than in the preceding January. In January there were 308 deaths per day and in February 310, which is not much above the average per diem death rate for years past. In March, however, there was an abrupt rise of the daily death rate to 344; in January, 1890, when the epidemic was then at its height, the daily rate was 398. The undisturbed zymotic death rate is ordinarily, in March, this as the sole or predominating cause of death. It expresses itself in the first place as causing acute respiratory disease and then in causing acute disease of other organs, notably the nervous and digestive and to a less degree the circulatory and urinary, and finally it hastens the death of those feeble from age, dyscrasias of all sorts and chronic disease. The increase, for instance, is seen in cancer and old age and to a large degree in the non-classified causes of death under the system of classification which is followed by this office. It is not apparent how it can be possible to take the returns as certified and sent to a local or central board for registry and classify from them those clearly attributable to this disease. It is left for inference, but it would appear that this need not be remote from the fact after the manner outlined.

This report is not intended to do other than speak of data furnished. The causes of the epidemic and of its recurrence have yet to be investigated. It may be added as another contributory fact, however, that it has not shown itself to be especially a disease either of the city or the country. It also has been noted that its second recurrence has been much more gradual, since when in 1890 it fell upon all parts of the State simultaneously, in 1891 it appeared here and there in one locality and then in another, and as a whole was found to exist possibly months before the acme of the epidemic was reached. Then, too, it seems to have varied greatly in its virulence in different localities, some of which exhibited one type of its multifarious forms of expression, some another. These would appear to imply that its germ (for with certainty it is a zymotic disease) having once made entry secures a local and probably a telluric habitat, that most likely needs atmospheric conditions for its development, that are favorable to its active germination. It is for closer study to tell what these are, or to say whether it is only infectious apart from the person or whether it is as many think contagious. It has proved to be a deadly scourge and one whose recurrence under its favorable conditions may yet be anticipated, against which we have yet to learn what powers to employ.

The common zymotic diseases.— These must be so called since the disease just mentioned, as an extraordinary zymotic disease, is not included among them.

A foregoing table shows the proportion which these diseases bear to the total mortality (see table giving number of deaths from zymotic diseases in each 1,000 deaths from all causes); from this may be learned the relative prevalence of diseases of this class for this year as compared with other years, and also their seasonal prevalence. It must be borne in mind that the mortality from grippe, in the winter of 1890, and the spring of 1891, is responsible for the very material lowering of the proportion, as observed in these seasons. Following this table is one which shows the comparative prevalence of each individual zymotic disease to the entire zymotic mortality, and this also shows their relative seasonal prevalence.

Taking these diseases in the order of their occurrence in the tabulation adopted reference will be made to each in detail.

Cerebro-spinal fever.— A noteworthy fact regarding this disease, shown by the accumulated statistics presented in the last preceding table is the almost perfect uniformity of its prevalence. In the winter it bears a proportion year after year of about 3.5 per cent to the entire zymotic mortality, in the spring 4.5 to 5.0, in summer about 1.5, and in the fall about 2.5 per cent. There is not a month in the year in which is fails of being reported, but the table confirms what has always been remarked regarding it, that it is most prevalent in the spring; next to that in the winter months.

It has not been called to the attention of the Board that it has especially prevailed in any particular locality, but it is a noticeable fact that it establishes itself in certain localities and remains there. For the past seven years it has caused 3.0 per cent of the zymotic mortality and that has been the proportion which it has borne during the past year.

Typhoid fever.— There were 1,890 deaths from this cause during the year, which is 1.5 per cent of the total mortality and this varies not materially from the proportion for the past seven years, being, however, somewhat higher. It has caused nearly ten per cent of the entire zymotic mortality. In December, January and February last a remarkable epidemic prevailed in the cities of Albany, Cohoes and Schenectady, and also in West Troy and to some extent in the surrounding country. It was a noteworthy feature of this outbreak that it occurred simultaneously in these places. The cause for this simultaneous outbreak has not, perhaps, been ascertained to the satisfaction of all. Inasmuch as the most prominent common factor that was present to all these places was that of their water supply coming from one stream, the Mohawk and Hudson below the entry of the later. This taken in connection with the fact that contiguous places, in which the atmospheric conditions could not have been materially different has given good reason to suspect this source; for instance, Green Island, which is practically a part of West Troy, Troy, Lansingburgh, Waterford and other communities farther north, all escaped this epidemic. By some it is held that these simultaneous outbreaks in these places were due to local causes, wherefore it is not to be considered, as generally agreed, that there has been one common cause, although such would seem to be looked for. The increase in the mortality for the State, which is confined to the winter and spring, is traceable to this extensive outbreak, there having been no special prevalence to a marked degree elsewhere. Epidemic prevalence on a minor scale was reported from Auburn and from Laurens in Otsego county; reports upon which are found elsewhere in this volume. The following table shows the number of deaths from typhoid fever in each thousand deaths during 1891 and the six foregoing years in the various sanitary districts of the State. The uniformly low rate of comparative prevalence of this disease in the Maritime district is the most noticeable fact. The Hudson Valley district has uniformly the highest number, the Southern Tier district following closely after it. That typhoid fever is a disease of the country rather than of the city is also shown by the following statistics taken from the September bulletin: In thirty cities 2.44 per cent of all deaths were from this cause; in forty-seven large villages, 2.74 per cent were from this cause; and in 1,886 country towns, entirely rural in character, 3.92 per cent of all deaths were from this disease, showing a very considerable increase in the last and a moderate increase in villages over cities.

IN EACH 1,000 DEATHS THERE WERE FROM TYPHOID FEVER IN THE —

	1885.	1886.	1887.	1888.	1889.	1890.	1891.
Maritime district	8.87	8.41	8.55	8.66	9.65	9.10	8.99
Hudson Valley district	27.85	27.28	27.27	32.22	23.14	19.10	30.61
Adirondack and Northern district	19.35	20.58	24.00	18.34	23.01	16.40	16.59
Mohawk Valley district	19.53	21.91	20.45	21.98	22.32	49.10	28.70
Southern Tier district	23.55	26.00	30.40	28.38	33.92	23.05	29.94
East Central district	19.64	27.45	20.50	28.65	24.00	18.16	27.05
West Central district	24.78	20.42	19.00	17.28	19.53	18.33	16.09
Lake Ontario and Western district	20.85	19.18	19.45	23.07	21.28	21.37	23.76
The entire State	13.27	13.47	13.75	14.18	14.86	12.35	16.12

Malarial diseases.— The year has shown a remarkably low death rate from diseases of this class. The summer months have been especially free — the lowest of any year on record. The periods of greatest prevalence were in the winter and fall, both seasons having about the same number of deaths. About three per cent of the total zymotic mortality was from malarial diseases, which is hardly half that of the years that preceded 1891.

Smallpox.— In January, a case of smallpox developed in Jamestown. The subject of it was a young man who had lately come there from Newark, N. J. Seven persons contracted the disease and there was one death. In April, a death was reported from this disease from New York. There was no further occurrence of smallpox in the State until November, when it broke out in Seneca, Ontario county. It was brought there by an emigrant who came to this country on a German steamer, he himself being an Englishman, shipping from Southampton. Smallpox was said to have been upon this ship and it was on that account detained at Quarantine. This man reached Seneca about September first and appears to have had mild varioloid; at any rate an eruptive disease, the nature of which was not recognized. A number of cases developed subsequently in the family, in which he found employment, and there were three deaths. The farther spread was speedily checked after the nature of the disease was recognized. One mild case contracted here occurred in the neighboring village of Geneva.

About the same time a young man was taken with varioloid in Kingston. He had been traveling in various places and at the time of his probable exposure was in Vermont and it seems probable that he took it by contact with certain persons from the Province of Quebec whom he casually met in travel. So far as is known this is the only possible case in which smallpox was taken from Quebec, where an extensive epidemic has prevailed since early in September, 150 cases being reported up to the end of the year, with about thirty deaths. During the year there have been five deaths in this State, and at the close of the year, its existence is not known of anywhere in the State.

Scarlet fever.— This has been much more prevalent than in 1890. Its increase began in the latter part of 1890, prior to which the State had been remarkably free from it. The increase was steady through the winter and spring months, but it has fallen off since then. For the year it caused 12.7 per cent of the zymotic deaths, more than double that of 1890. In 1889, the proportion was about the same as in 1891. It is still somewhat above the average degree of prevalence. The actual number of deaths reported from this cause, showing its varying prevalence is as follows: In 1885, 1,184 deaths; in 1886, 1,011 deaths; in 1887, 1,267 deaths; in 1888, 2,456 deaths; in 1889, 2,107 deaths; in 1890, 913 deaths, and in 1891, 2,254 deaths.

Measles.—No disease is more variable than this. It ranges from one per cent to twenty-four per cent of the zymotic mortality. It was prevalent to an unusual degree in the early half of 1891, but has fallen off very much during the latter half of the year, causing but 1.5 per cent of the deaths from zymotic diseases during the last quarter of the year. It bore a proportion of seven pe r cent for the entire year. There were 1,239 deaths from this cause during the twelve months covered by this report. The following are the numbers of deaths from measles year by year since 1885: 1,170, 895, 1,205, 944, 899, 1,161 and 1,200.

Whooping cough.—From this disease there has been comparative freedom; 858 deaths were attributed to it. In 1890 there were 1,158, and in 1889, 1,332. Five per cent of the zymotic mortality, this year, was caused by whooping cough. Like scarlet fever and measles, there is no stability to its prevalence.

Diphtheria.— This is the most important of all the zymotic diseases, and the one which calls for more persistent efforts for its control. Out of 21,717 deaths from zymotic diseases in 1891, 4,844 were from diphtheria, nearly one-fifth of the entire amount; or, deducting diarrhoeal diseases, nearly forty per cent of all other zymotic diseases. It is gratifying to note, however, a steady diminution in its total prevalence, as noted on the large scale of year by year. The following are the proportions of deaths from diphtheria as compared with the number of deaths from all causes for the last seven years: In each 1,000 deaths there were, from diphtheria, in 1885, 56.06; in 1886, 64.48; in 1887, 67.27; in 1888, 61.73; in 1889, 56.12; in 1890, 42.07, and in 1891, 39.78. The same appears in the actual number of deaths year by year from this disease. In 1885 there were 7,300 deaths from diphtheria; in 1886, 5,600; in 1887, 6,500; in 1888, 6,450; in 1889, 5,850; in 1890, 4,915 and in the twelve months just ended, 4,850. This shows that the disease has decreased steadily for years. It is, perhaps, not susceptible of proof that this diminution has been the direct result of control of the disease by the sanitary authorities, but it is to be said that its diminution, which has now brought the actual number of deaths down to only about half what they were seven years ago, begins and corresponds with the more intelligent management of the disease, which has been the outcome of study of the disease during recent years. It is but a few years ago that the thing of first importance to stop the spread of diphtheria is to isolate the sick and destroy the disease germs manufactured by it, was emphasized and acted on. This knowledge, and its application, has certainly gone with the fact of a steady falling off in the mortality, and it is not too much to claim that a very large part at least of the salvage of life has been its direct product. This means the saving of not less than 1,600 lives in the last five years. This comes from the application of restrictive regulations applied to the individual. This personal equation is comparatively easy to solve; it is a much more complicated question to find how to eradicate the disease from the locality. Fortunately this is comparatively easy in most of the instances brought to this Board, applying, as they do generally, to the outbreak of the disease in rural localities. It is in the sewered city that the disease will continue to cling with pertinacity until some method is devised that will destroy it there. Taking the figures of the table accompanying, which shows the mortality per 1,000 from diphtheria by sanitary districts, it is seen that the largest proportions are in those districts having the largest city population. In thirty cities, having an aggregate population of 3,657,500, it was found that 4.04 per cent of the deaths were from diphtheria; in forty-seven large villages, with 417,000 population, 2.74 per cent of all deaths were from diphtheria, and in 1,886 rural towns there were 2.12 deaths from diphtheria in each 100 deaths from all causes. The opposite to this was found to be the case with typhoid fever, as has been already noted, that disease being much more prevalent proportionately in the country than in the city.

The summer months are those most free from diphtheria; it increases in October and November and falls off as the winter months pass and shows a steady diminution month after month until fall. The causes for this seasonal prevalence are possible due to the increased chances for exposure by reason of children being gathered in schools. There is no doubt that mild cases escaping observation are the means of spreading the disease, as are also those imperfectly cured, allowed too early to mingle again with the well.

IN EACH 1,000 DEATHS THERE WERE FROM DIPHTHERIA IN THE—

	1885.	1886.	1887.	1888.	1889.	1890.	1891.
Maritime district	58.28	71.43	75.40	67.95	63.00	49.10	44.73
Hudson Valley district	72.08	43.35	49.00	46.57	33.87	37.90	36.18
Adirondack and Northern district	64.87	61.93	58.50	64.27	65.00	13.30	29.10
Mohawk Valley district	44.74	36.80	67.40	65.52	52.12	52.72	28.70
Southern Tier district	27.57	41.03	44.40	34.18	34.54	35.28	35.95
East Central district	32.74	40.34	30.60	43.10	33.70	22.78	13.93
West Central district	22.63	20.42	30.80	23.38	27.07	16.38	8.17
Lake Ontario and Western district	49.53	58.25	58.67	51.09	35.78	32.64	40.45
The entire State	56.06	64.48	67.27	61.73	56.12	42.07	39.78

Diarrhoeal diseases caused 9,144 deaths, being more than 40 per cent of the entire zymotic mortality. It is from this cause that the death rate is so largely increased in the summer months. In July in 135 cities and villages and large towns, having an aggregate population of 4,300,000, the death rate was twenty-five per 1,000 inhabitants, that of the remaining rural portion of the State being 13.25. Almost all the deaths from this cause come from the large cities. More than 50 per cent of the deaths always during July occur under the age of 5 years, and about one-third of the deaths from diarrhoea occur in that month; but the proportion of infant mortality in the country towns is only about 20 per cent. There has been but little variation from the average for past years. August ordinarily has a somewhat lower diarrhoeal mortality and September still lower, these three being the months of its great occurrence.

Consumption.— This disease should, according to modern views, be classed among the zymotic diseases. It caused 13,400 deaths, which is far in excess of the number of deaths from any other disease. The proportion which it bears to the mortality from all causes is for some reason considerably less than in former years, partly because of the deaths from influenza which disturbs the proportions. This disease, however, is partly expressed in the mortality from consumption. There were actually about 400 fewer deaths from consumption in 1891 than in 1890. The proportion of deaths to other deaths is shown by the accompanying table which gives the proportions of deaths from this cause to deaths from all causes. For 1891 the proportion is lower than for the years preceding; this is in part due to the influenza epidemic. The actual number of deaths from this cause has not varied much from 13,000 deaths annually for the State.

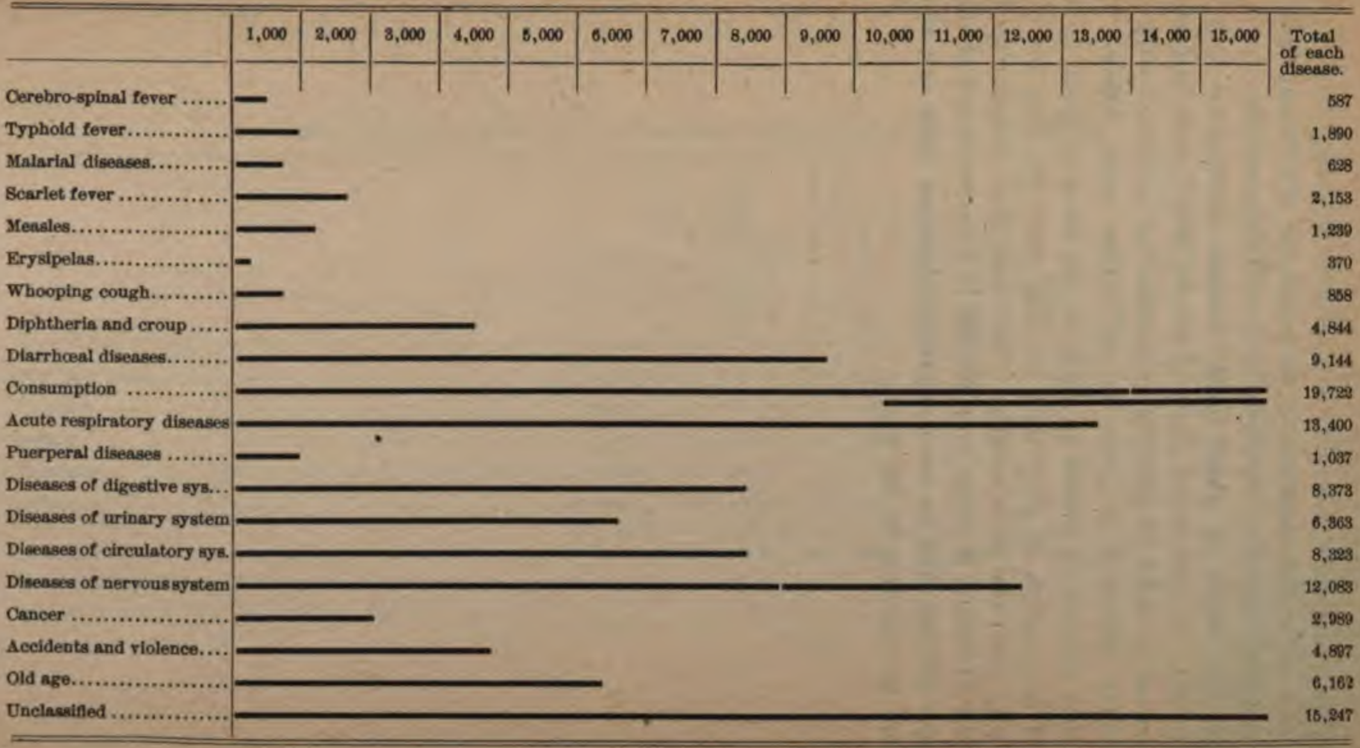
IN EACH 1,000 DEATHS FROM ALL CAUSES THERE WERE FROM CONSUMPTION IN THE —

	1885.	1886.	1887.	1888.	1889.	1890.	1891.
Maritime district	143.58	140.52	121.80	124.10	123.20	133.20	113.42
Hudson Valley district	144.83	137.00	134.85	114.20	130.92	123.50	.111.49
Adirondack and Northern district	147.82	137.90	122.00	110.91	121.76	114.44	112.89
Mohawk Valley district	143.67	132.30	111.25	115.36	113.50	112.56	109.98
Southern Tier district	114.25	100.95	94.40	100.73	88.49	89.21	90.21
East Central district	139.93	131.52	118.40	110.61	110.95	107.24	110.66
West Central district	155.08	141.08	115.40	112.20	110.35	113.89	110.62
Lake Ontario and Western district	130.80	125.77	105.55	103.60	104.46	110.56	105.81
The entire State	139.76	137.66	120.35	118.55	120.00	122.00	111.29

Most of these are increased, and it is in these that the increase of this year and last is shown, since in these are included practically all the deaths from epidemic influenza. It is in the acute respiratory diseases that the increase of deaths is mainly shown, and for the year 1890, we find over 20,000 deaths to have occurred from this cause. Deaths from diseases of the nervous, digestive and circulatory systems are also much greater in number than usual. Aside from the cause already mentioned, and more fully detailed under the consideration of the subject of influenza, there has been no reason for any unusual increase in the mortality from these causes, which ordinarily preserve a pretty uniform death rate.

As a graphic illustration of the relative number of deaths during the year from all causes, the following table may be found:

SUMMARY OF MORTALITY FOR 1891.



Urban and rural mortality compared.—Reference has already been made to the variations in the prevalence of different diseases in different localities, especially in the different sanitary districts, from the tables in which much valuable information may be obtained. A more exact study of deaths from certain important diseases in cities of different population as compared with the country mortality, is given in the tables which follow. The actual number of deaths in each of the cities is given in the two first tables, in order that one may have the data for comparing them one with another. The third table summarizes the totals of deaths in cities over 100,000 in population and of those under 100,000, and to the comparisons between them are added those for the rest of the State:

TOTAL MORTALITY FOR 1891 OF CITIES OF 100,000 POPULATION AND OVER.

	Total deaths.	Deaths under 5 years of age.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Scarlet fever.	Measles.	Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.
New York city	43,014	18,062	187.42	184	384	186	1,177	655	1,926	3 550	7,538	5,167
Brooklyn	20,379	9,425	201.60	95	186	127	493	211	1,165	1,736	4,291	2,121
Buffalo	5,820	2,601	208.21	76	133	81	61	56	317	535	984	538
Rochester	2,383	749	149.34	2	46	11	19	1	100	188	315	246
Albany	2,328	602	162.37	11	105	10	19	7	71	155	417	317
Totals	73,924	30,439	189.81	368	854	365	1,769	933	3,579	6,164	13,545	8,389

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC. —(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Brookhaven, Suffolk county	254	......	6	......	......	......	3	2	6	22
BROOKLYN, Kings county	20,550	92	180	127	485	203	143	1,180	1,749	2,137
Broome, Schoharie county	16	......	......	......	......	......	......	......	......	......
Brownville, Jefferson county	45	......	2	......	......	......	......	1	1	4
Brunswick, Rensselaer county	59	......	5	......	......	......	......	5	......	......
Brutus, Cayuga county	46	......	......	......	......	......	......	......	......	5
BUFFALO, Erie county	5,999	73	129	32	67	59	14	342	535	549
Burke, Franklin county	17	......	......	......	......	......	......	......	......	1
Burlington, Otsego county	19	......	1	......	......	......	......	......	......	1
Burns, Allegany county	34	......	......	......	......	......	......	......	1	1
Busti, Chautauqua county	15	......	......	......	1	......	......	......	......	1
Butler, Wayne county	9	......	......	......	......	......	......	......	......	......
Butternuts, Otsego county	30	......	......	......	1	......	......	......	......	3
Byron, Genesee county	20	......	......	......	......	......	......	1	......	2
Cairo, Greene county	40	......	1	......	......	......	......	......	......	2
Caldwell, Warren county	17	......	......	......	......	......	......	......	......	1
Caledonia, Livingston county	25	......	......	......	......	......	......	......	2	2
Callicoon, Sullivan county	35	......	......	......	......	......	......	......	......	4
Cambria, Niagara county	16	......	1	......	......	......	......	......	......	......
Cambridge, Washington county	45	......	......	......	......	......	......	......	......	3
Camden, Oneida county	62	......	1	......	1	......	......	1	2	7

Cameron, Steuben county	14									5
Camillus, Onondaga county	30		1						1	1
Campbell, Steuben county	20								1	2
Canaan, Columbia county	23		1							1
Canadice, Ontario county	9									
Canajoharie, Montgomery county	45							1		5
Canandaigua, Ontario county	31							1	1	1
Canandaigua, Ontario county	80								6	9
Candor, Tioga county	63		4						6	2
Caneadea, Allegany county	25						1			1
Canisteo, Steuben county	3									
Canton, St. Lawrence county	57								3	3
Cape Vincent, Jefferson county	0									
Carlisle, Schoharie county	14									1
Carlton, Orleans county	13									3
Carmel, Putnam county	34							1		1
Caroga, Fulton county	6									
Caroline, Tompkins county	23		1						1	
Carrol, Chautauqua county	27									2
Carrolton, Cattaraugus county	17									
Castile, Wyoming county	31								1	5
Catharine, Schuyler county	0									
Catlin, Chemung county	16		1							
Cato, Cayuga county	26		2						1	1
Caton, Steuben county	15								2	1
Catskill, Greene county	46							3	1	3
Catskill, Greene county	123		3	3				7	5	15
Cayuta, Schuyler county	3									
Cazenovia, Madison county	0									
Centreville, Allegany county	14									
Champion, Jefferson county	23									2

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC. —(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Brookhaven, Suffolk county	254		6				3	2	6	22
BROOKLYN, Kings county	20,550	92	180	127	485	203	143	1,180	1,749	2,137
Broome, Schoharie county	16									
Brownville, Jefferson county	45		2					1	1	4
Brunswick, Rensselaer county	59		5					5		
Brutus, Cayuga county	46									5
BUFFALO, Erie county	5,999	73	129	32	67	59	14	342	535	549
Burke, Franklin county	17									1
Burlington, Otsego county	19		1							1
Burns, Allegany county	34								1	1
Busti, Chautauqua county	15				1					1
Butler, Wayne county	9									
Butternuts, Otsego county	30				1					3
Byron, Genesee county	20							1		2
Cairo, Greene county	40		1							2
Caldwell, Warren county	17									1
Caledonia, Livingston county	25								2	2
Callicoon, Sullivan county	35									4
Cambria, Niagara county	16		1							
Cambridge, Washington county	45									3
Camden, Oneida county	62		1		1			1	2	7

Cameron, Steuben county	14									5
Camillus, Onondaga county	30		1						1	1
Campbell, Steuben county	20								1	2
Canaan, Columbia county	23		1							1
Canadice, Ontario county	9									
Canajoharie, Montgomery county	45							1		5
Canandaigua, Ontario county	31							1	1	1
Canandaigua, Ontario county	80								6	9
Candor, Tioga county	63		4						6	2
Caneadea, Allegany county	25						1			1
Canisteo, Steuben county	3									
Canton, St. Lawrence county	57								3	3
Cape Vincent, Jefferson county	0									
Carlisle, Schoharie county	14									1
Carlton, Orleans county	13									3
Carmel, Putnam county	34							1		1
Caroga, Fulton county	6									
Caroline, Tompkins county	23		1						1	
Carrol, Chautauqua county	27									2
Carrolton, Cattaraugus county	17									
Castile, Wyoming county	31								1	5
Catharine, Schuyler county	0									
Catlin, Chemung county	16		1							
Cato, Cayuga county	26		2						1	1
Caton, Steuben county	15								2	1
Catskill, Greene county	46							3	1	3
Catskill, Greene county	123		3	3				7	5	15
Cayuta, Schuyler county	3									
Cazenovia, Madison county	0									
Centreville, Allegany county	14									
Champion, Jefferson county	23									2

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC. —(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Brookhaven, Suffolk county	254	......	6	......	......	......	3	2	6	22
BROOKLYN, Kings county	20,550	92	180	127	485	203	143	1,180	1,749	2,137
Broome, Schoharie county	16	......	......	......	......	......	......	......	......	......
Brownville, Jefferson county	45	......	2	......	......	......	......	1	1	4
Brunswick, Rensselaer county	59	......	5	......	......	......	......	5	......	......
Brutus, Cayuga county	46	......	......	......	......	......	......	......	......	5
BUFFALO, Erie county	5,999	73	129	32	67	59	14	342	535	549
Burke, Franklin county	17	......	......	......	......	......	......	......	......	1
Burlington, Otsego county	19	......	1	......	......	......	......	......	......	1
Burns, Allegany county	34	......	......	......	......	......	......	......	1	1
Busti, Chautauqua county	15	......	......	......	1	......	......	......	......	1
Butler, Wayne county	9	......	......	......	......	......	......	......	......	......
Butternuts, Otsego county	30	......	......	......	1	......	......	......	......	3
Byron, Genesee county	20	......	......	......	......	......	......	1	......	2
Cairo, Greene county	40	......	1	......	......	......	......	......	......	2
Caldwell, Warren county	17	......	......	......	......	......	......	......	......	1
Caledonia, Livingston county	25	......	......	......	......	......	......	......	2	2
Callicoon, Sullivan county	35	......	......	......	......	......	......	......	......	4
Cambria, Niagara county	16	......	1	......	......	......	......	......	......	......
Cambridge, Washington county	45	......	......	......	......	......	......	......	......	3
Camden, Oneida county	62	......	1	......	1	......	......	1	2	7

Cameron, Steuben county	14									5
Camillus, Onondaga county	30		1						1	1
Campbell, Steuben county	20								1	2
Canaan, Columbia county	23		1							1
Canadice, Ontario county	9									
Canajoharie, Montgomery county	45							1		5
Canandaigua, Ontario county	31							1	1	1
Canandaigua, Ontario county	80								6	9
Candor, Tioga county	63		4						6	2
Caneadea, Allegany county	25						1			1
Canisteo, Steuben county	3									
Canton, St. Lawrence county	57								3	3
Cape Vincent, Jefferson county	0									
Carlisle, Schoharie county	14									1
Carlton, Orleans county	13									3
Carmel, Putnam county	34							1		1
Caroga, Fulton county	6									
Caroline, Tompkins county	23		1						1	
Carrol, Chautauqua county	27									2
Carrolton, Cattaraugus county	17									
Castile, Wyoming county	31								1	5
Catharine, Schuyler county	0									
Catlin, Chemung county	16		1							
Cato, Cayuga county	26		2						1	1
Caton, Steuben county	15								2	1
Catskill, Greene county	46							3	1	3
Catskill, Greene county	123		3	3				7	5	15
Cayuta, Schuyler county	3									
Cazenovia, Madison county	0									
Centreville, Allegany county	14									
Champion, Jefferson county	23									2

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC. — (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Champlain, Clinton county	14	......	......	......	......	......	1	......	......	2
Charleston, Montgomery county	13	......	......	......	......	......	......	......	......	1
Charlotte, Chautauqua county	50	......	......	......	......	......	......	3	2	3
Charlton, Saratoga county	17	......	2	......	......	......	......	......	......	......
Chateaugay, Franklin county	21	......	......	......	......	1	......	2	1	2
Chatham, Columbia county	79	......	2	......	......	......	1	......	3	5
Chautauqua, Chautauqua county	47	1	2	......	......	......	......	1	1	......
Chazy, Clinton county	13	......	......	......	......	......	......	......	......	......
Cheektowaga, Erie county	31	......	......	......	......	......	......	......	2	2
Chemung, Chemung county	18	......	......	......	......	......	......	......	......	......
Chenango, Broome county	32	1	......	......	......	......	......	1	......	1
Cherry Creek, Chautauqua county	14	......	......	......	......	......	......	......	......	......
Cherry Valley, Otsego county	14	......	......	......	......	......	......	......	......	......
Chester, Orange county	38	......	......	......	......	1	1	......	1	5
Chester, Warren county	32	......	......	......	......	......	......	1	3	1
Chesterfield, Essex county	68	1	......	......	1	......	......	12	......	5
Chili, Monroe county	30	......	......	......	......	......	1	......	......	2
Cicero, Onondaga county	25	......	1	......	......	......	......	......	1	......
Cincinnatus, Cortland county	10	......	......	......	......	......	......	......	......	......
Clare, St. Lawrence county	6	......	......	......	......	......	......	1	......	......

Clarence, Erie county	45		2						1	2
Clarendon, Orleans county	12									
Clarkson, Monroe county	0									
Clarkstown, Rockland county	86				1		1	1		1
Clarksville, Allegany county	7									
Claverack, Columbia county	65		1		3				3	4
Clay, Onondaga county	31		1							2
Clayton, Jefferson county	0									
Clermont, Columbia county	5									2
Clifton, St. Lawrence county	6							4		
Clifton Park, Saratoga county	41		1							1
Clinton, Clinton county	8		2							1
Clinton, Dutchess county	17									
Clyde, Wayne county	53								5	2
Clymer, Chautauqua county	0									
Cobleskill, Schoharie county	53		1							6
Cochecton, Sullivan county	16									
Coeymans, Albany county	62		2					14		2
Cohocton, Steuben county	7									
COHOES, Albany county	538	0	50	2	4	0	1	32	56	48
Colchester, Delaware county	18									
Colden, Erie county	25							2	3	3
Cold Spring, Cattaraugus county	2									
Colesville, Broome county	48		1							1
Collins, Erie county	15							1		1
Colton, St. Lawrence county	19							5		
Columbia, Herkimer county	13									
Columbus, Chenango county	13					1				1
Concord, Erie county	54		1			1		1		2
Conesus, Livingston county	10									
Conesville, Schoharie county	12									

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC. — (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Conewango, Cattaraugus county	12	......	......	......	......	......	......	......	......	......
Conklin, Broome county	12	......	......	......	......	......	......	......	......	......
Conquest, Cayuga county	19	......	......	......	......	......	......	......	......	2
Constable, Franklin county	22	......	......	......	......	......	......	......	1	2
Constantia, Oswego county	31	......	......	......	......	......	......	......	......	1
Cooperstown, Otsego county	38	......	......	......	......	......	......	......	2	......
Copake, Columbia county	25	......	......	......	......	......	......	......	......	......
Corinth, Saratoga county	42	......	3	......	......	......	......	......	......	4
CORNING, Steuben county	149	0	1	0	2	4	0	3	22	18
Corning, Steuben county	24	......	......	......	......	1	......	......	......	3
Cornwall, Orange county	93	......	......	......	1	......	......	3	2	6
Cortland, Cortland county	161	......	5	......	1	......	1	14	6	12
Cortlandt, Westchester county	90	......	......	......	......	......	......	3	2	5
Cortlandville, Cortland county	54	......	......	......	......	......	......	......	......	3
Coventry, Chenango county	22	......	......	......	......	......	......	......	......	1
Covert, Seneca county	26	......	1	......	......	......	......	......	......	......
Covington, Wyoming county	4	......	......	......	......	......	......	......	......	......
Coxsackie, Greene county	70	2	1	......	......	......	......	1	1	11
Crawford, Orange county	18	......	......	......	......	......	......	......	1	2
Croghan, Lewis county	32	......	......	......	......	......	......	......	......	1
Crown Point, Essex county	23	......	......	......	......	......	......	1	......	1

Cuba, Allegany county	7									1
Cuyler, Cortland county	12							2		
Danby, Tompkins county	22				1			2	1	1
Dannemora, Clinton county	21									6
Dansville, Steuben county	14									
Dansville, Livingston county	67		1							18
Danube, Herkimer county	6		1							
Darien, Genesee county	31								1	
Davenport, Delaware county	25								1	1
Day, Saratoga county	4									
Dayton, Cattaraugus county	14		1							
Decatur, Otsego county	5							1		
Deerfield, Oneida county	18									
Deerpark, Orange county	43					1			1	1
De Kalb, St. Lawrence county	24									2
Delaware, Sullivan county	7									
Delhi, Delaware county	46		1							3
Denmark, Lewis county	36									2
Denning, Ulster county	8		1							
Deposit, Delaware county	31		1					1		3
De Peyster, St. Lawrence county	15		5							2
De Ruyter, Madison county	35	1								1
De Witt, Onondaga county	69								2	2
Diana, Lewis county	0									
Dickinson, Franklin county	14								1	2
Dix, Schuyler county	68									
Dover, Dutchess county	28							1		1
Dresden, Washington county	9							1		
Dryden, Tompkins county	60	1	1						1	5
Duane, Franklin county	4									
Duanesburgh, Schenectady county	17									

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Dundee, Yates county	21									1
DUNKIRK, Chautauqua county	0									
Durham, Greene county	41		2							3
Eagle, Wyoming county	26									
East Bloomfield, Ontario county	21									1
East Chester, Westchester county	135		1					2	12	10
East Fishkill, Dutchess county	36			1				1		1
East Greenbush, Rensselaer county	38		1					1		5
East Hamburgh, Erie county	35									2
Easthampton, Suffolk county	32									1
Easton, Washington county	46								1	4
East Otto, Cattaraugus county	16					1				2
Eaton, Madison county	56	1								1
Eden, Erie county	40		1							1
Edgewater, Richmond county	405		6	5	10	4	4	24	38	44
Edinburgh, Saratoga county	17									
Edmeston, Otsego county	35							1	2	
Edwards, St. Lawrence county	14		1							1
Elba, Genesee county	18									1
Elbridge, Onondaga county	56							1	1	4
Elizabethtown, Essex county	18		1							

Ellenburgh, Clinton county	4									
Ellenville, Ulster county	29		1						5	1
Ellery, Chautauqua county	18					1	1			1
Ellicott, Chautauqua county	25		2							1
Ellicottville, Cattaraugus county	31		1			2				3
Ellington, Chautauqua county	26		2							1
Ellisburgh, Jefferson county	84		1						2	10
Elma, Erie county	30					1			2	1
ELMIRA, Chemung county	637	4	12	2	3	0	1	52	42	42
Elmira, Chemung county	13									
Enfield, Tompkins county	19									1
Ephratah, Fulton county	10								2	
Erin, Chemung county	7									
Erwin, Steuben county	32								2	4
Esopus, Ulster county	81		2	3		1	1	3	4	4
Esperance, Schoharie county	15									
Essex, Essex county	13		1							
Evans, Erie county	37								1	2
Exeter, Otsego county	19	1								1
Fabius, Onondaga county	29									1
Fairfield, Herkimer county	18							5		
Fallsburgh, Sullivan county	8									
Farmersville, Cattaraugus county	20									
Farmington, Ontario county	16									
Fayette, Seneca county	36				1					2
Fenner, Madison county	9									
Fenton, Broome county	11		1	1						1
Fillmore, Allegany county	1									
Fine, St. Lawrence county	9									
Flatbush, Kings county	945		3			3		7	45	203
Flatlands, Kings county	67				1		2	5	2	3

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC. — (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Fleming, Cayuga county	17	......	......	......	......	......	......	1	......	1
Florence, Oneida county	16	......	......	......	......	......	......	......	......	1
Florida, Montgomery county	33	......	......	......	1	......	......	1	1	......
Floyd, Oneida county	8	......	......	......	......	......	......	......	......	......
Flushing, Queens county	0	......	......	......	......	......	......	......	......	......
Forestburgh, Sullivan county	5	......	......	......	......	......	......	......	......	......
Forestport, Oneida county	34	......	......	......	......	......	1	1	5	2
Fort Ann, Washington county	53	......	......	2	......	......	......	1	3	5
Fort Covington, Franklin county	32	......	......	......	......	......	......	......	......	2
Fort Edward, Washington county	78	......	1	......	......	......	3	......	5	9
Fort Plain, Montgomery county	48	......	3	......	......	1	......	1	2	5
Fowler, St. Lawrence county	21	......	......	......	......	1	......	1	......	2
Franklin, Delaware county	41	......	1	......	......	......	......	......	......	......
Franklinville, Cattaraugus county	34	......	......	......	......	1	......	......	......	......
Frankfort, Herkimer county	66	......	1	......	......	......	......	9	3	1
Fredonia, Chautauqua county	55	1	......	......	......	......	......	1	1	1
Freedom, Cattaraugus county	18	1	......	......	......	......	......	......	......	......
Freetown, Cortland county	9	......	......	......	......	......	......	......	......	......
Fremont, Sullivan county	18	......	......	......	......	......	......	......	......	2
French Creek, Chautauqua county	0	......	......	......	......	......	......	......	......	......
Friendship, Allegany county	30	......	......	......	......	......	......	1	......	1

Fulton, Schoharie county	38		1			1				2
Fulton, Oswego county	77							7	3	4
Gaines, Orleans county	26									2
Gainesville, Wyoming county	46								1	
Galen, Wayne county	25									
Gallatin, Columbia county	13									
Galway, Saratoga county	32		1							1
Gardiner, Ulster county	22									1
Gates, Monroe county	32		1					5	4	1
Geddes, Onondaga county	30									
Genesee, Allegany county	6									
Genesee Falls, Wyoming county	10									
Geneseo, Livingston county	19									3
Geneva, Ontario county	22									
Geneva, Ontario county	148	1	3		2		3	1	7	24
Genoa, Cayuga county	12									1
Georgetown, Madison county	19									1
German, Chenango county	1									
German Flats, Herkimer county	20		1					1	2	
Germantown, Columbia county	17									
Gerry, Chautauqua county	19		2							
Ghent, Columbia county	45		1							5
Gilboa, Schoharie county	21									
Glen, Montgomery county	37		2					1		5
Glens Falls, Warren county	168		3			1	1	4	17	24
Glenville, Schenectady county	34		3							3
GLOVERSVILLE, Fulton county	225	0	2	1	3	0	5	11	25	24
Gorham, Ontario county	33				1					1
Goshen, Orange county	100	1						2	1	11
Gouverneur, St. Lawrence county	72	1	4		1			1	5	11
Grafton, Rensselaer county	22									

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC. — (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Granby, Oswego county	73				2			1	1	5
Grand Island, Erie county	12		1							
Granger, Allegany county	9									
Granville, Washington county	59		1					5		5
Gravesend, Kings county	153		1		3			3	35	12
Great Valley, Cattaraugus county	32							3		1
Greece, Monroe county	46	1						3		2
Greenburgh, Westchester county	217	1			3			4	3	17
Greenbush, Rensselaer county	154	5	5	1	2	4	1	11	4	8
Greene, Chenango county	58		1							4
Greenfield, Saratoga county	39									5
Green Island, Albany county	102	1	6	1				2	4	11
Greenport, Columbia county	18								1	
Greenville, Greene county	49									4
Greenville, Orange county	22									
Greenwich, Washington county	18		1						1	
Greenwood, Steuben county	13									
Greig, Lewis county	18								1	1
Groton, Tompkins county	64		1						1	4
Grove, Allegany county	6									
Groveland, Livingston county	12								1	1

Guilderland, Albany county	44	......	......	......	......	......	......	......	......	3
Guilford, Chenango county	26	......	......	......	......	......	......	......	......	2
Hadley, Saratoga county	7	......	......	1	......	......	......	......	......	......
Hague, Warren county	5	......	......	......	......	......	......	......	......	......
Halcott, Greene county	5	......	......	......	......	......	......	......	......	......
Half Moon, Saratoga county	53	......	2	......	......	......	......	3	1	5
Hamburgh, Erie county	48	......	2	......	......	......	......	1	2	3
Hamden, Delaware county	25	......	......	......	......	......	......	......	......	2
Hamilton, Madison county	85	......	......	......	......	......	......	......	......	1
Hamlin, Monroe county	23	......	1	......	......	......	......	1	......	2
Hammond, St. Lawrence county	19	......	......	......	......	......	......	......	......	......
Hampton, Washington county	19	......	......	......	......	......	......	......	......	......
Hamptonburgh, Orange county	13	......	......	......	......	......	......	......	......	......
Hancock, Delaware county	47	......	......	......	......	......	1	......	2	1
Hannibal, Oswego county	34	......	1	......	......	......	......	......	1	1
Hanover, Chautauqua county	80	......	......	......	......	1	......	5	3	4
Hardenburgh, Ulster county	17	......	1	......	......	......	......	......	......	1
Harford, Cortland county	15	......	......	......	......	......	......	......	1	1
Harmony, Chautauqua county	18	......	......	......	......	1	......	......	......	......
Harpersfield, Delaware county	10	......	......	......	......	......	......	......	......	......
Harrietstown, Franklin county	34	......	......	......	......	......	......	1	2	10
Harrisburgh, Lewis county	9	......	......	......	......	......	......	......	......	......
Harrison, Westchester county	20	......	1	......	......	......	......	......	......	3
Hartford, Washington county	19	......	......	......	......	......	......	......	......	2
Hartland, Niagara county	48	......	......	......	......	1	......	......	......	......
Hartsville, Steuben county	4	......	......	......	......	......	......	......	......	......
Hartwick, Otsego county	24	......	1	......	......	......	......	......	......	1
Hastings, Oswego county	63	......	......	1	......	......	......	1	......	3
Haverstraw, Rockland county	181	......	2	1	......	1	......	......	7	16
Hebron, Washington county	16	......	......	......	......	......	......	......	......	1
Hector, Schuyler county	55	1	......	......	1	......	......	......	3	2

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC. — (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Hempstead, Queens county	459	1	1	1	9	4	5	6	35	32
Henderson, Jefferson county	26	1	3	......	......	......	......	......	......	......
Henrietta, Monroe county	37	......	......	......	......	......	......	......	......	2
Herkimer, Herkimer county	22	......	......	......	......	......	......	......	......	2
Hermon, St. Lawrence county	17	......	......	......	......	......	......	......	......	1
Highlands, Orange county	37	......	......	......	......	......	1	......	1	1
Highland, Sullivan county	7	......	......	......	......	......	......	......	......	......
Highmarket, Lewis county	18	......	......	......	......	......	......	3	......	......
Hillsdale, Columbia county	7	......	......	......	......	......	......	......	......	......
Hinsdale, Cattaraugus county	12	......	......	......	1	......	......	......	......	......
Holland, Erie county	36	......	1	......	......	1	......	1	1	2
Homer, Cortland county	33	......	1	......	......	......	......	1	......	3
Homer, Cortland county	48	......	3	......	......	......	......	1	6	6
Hoosick, Rensselaer county	62	......	......	......	2	......	......	......	2	5
Hoosick Falls, Rensselaer county	115	1	2	......	10	......	1	3	11	16
Hope, Hamilton county	1	......	......	......	......	......	......	......	......	......
Hopewell, Ontario county	40	......	......	......	......	......	......	......	......	......
Hopkinton, St. Lawrence county	28	......	......	......	......	......	......	......	1	2
Horicon, Warren county	26	......	......	......	......	......	......	......	......	......
Hornby, Steuben county	17	......	......	......	......	......	......	......	......	......
HORNELLSVILLE, Steuben county	156	3	14	1	4	1	1	1	15	12

Hornellsville, Steuben county	16									
Horseheads, Chemung county	46		1						3	9
Hounsfield, Jefferson county	38									1
Howard, Steuben county	5									
HUDSON, Columbia county	191	0	3	3	0	0	0	6	17	14
Hume, Allegany county	17									
Humphrey, Cattaraugus county	9									
Hunter, Greene county	32	1								2
Hurley, Ulster county	38									
Huron, Wayne county	31							4		3
Hyde Park, Dutchess county	39									5
Ilion, Herkimer county	69		5			1		6	6	2
Independence, Allegany county	13									
Indian Lake, Hamilton county	19		2						2	
Ira, Cayuga county	25								3	1
Irondequoit, Monroe county	23								1	1
Ischua, Cattaraugus county	6									
Islip, Suffolk county	172		2		3		1	2	6	13
Italy, Yates county	0									
ITHACA, Tompkins county	157	0	2	0	1	0	0	2	4	11
Ithaca, Tompkins county	4									
Jackson, Washington county	20									
Jamaica, Queens county	379	1	1	3	5		1	18	38	30
JAMESTOWN, Chautauqua county	240	4	10	0	4	0	1	5	5	25
Jasper, Steuben county	18									1
Java, Wyoming county	16									
Jay, Essex county	27		1						1	1
Jefferson, Schoharie county	18									2
Jerusalem, Yates county	30					1				
Jewett, Greene county	6									1
Johnsburgh, Warren county	16							1		

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Johnstown, Fulton county	61	......	1	......	2	......	......	......	......	3
Johnstown, Fulton county	125	2	5	......	4	2	2	1	3	15
Junius, Seneca county	14	......	......	......	......	......	......	1	......	1
Keene, Essex county	15	......	......	......	......	......	......	......	......	......
Kendall, Orleans county	20	......	......	......	......	......	......	......	......	......
Kent, Putnam county	26	......	......	......	......	......	1	......	......	3
Kiantone, Chautauqua county	8	......	......	......	......	......	......	......	......	......
Kinderhook, Columbia county	74	......	2	......	......	......	......	......	......	3
Kingsbury, Washington county	64	......	1	......	......	......	......	......	5	1
KINGSTON, Ulster county	383	14	2	14	4	0	0	18	31	41
Kingston, Ulster county	16	......	......	......	......	......	......	......	......	3
Kirkland, Oneida county	60	......	......	......	1	......	......	......	......	4
Kirkwood, Broome county	18	......	1	......	......	......	......	......	......	1
Knox, Albany county	8	......	......	......	......	......	......	......	......	......
Kortwright, Delaware county	7	......	......	......	......	......	......	1	......	1
La Fayette, Onondaga county	25	......	......	......	......	......	......	......	......	......
La Grange, Dutchess county	23	......	......	......	......	......	......	......	1	......
Lake Pleasant, Hamilton county	2	......	......	......	......	......	......	......	......	......
Lancaster, Erie county	68	......	1	......	1	1	......	2	1	8
Lansing, Tompkins county	5	......	......	......	......	......	......	......	......	......
Lansingburgh, Rensselaer county	238	......	14	1	......	......	1	6	14	21

Lapeer, Cortland county	5									
Laurens, Otsego county	37		5						7	
Lawrence, St. Lawrence county	19		1		1					
Lebanon, Madison county	23									
Ledyard, Cayuga county	15									
Lee, Oneida county	27									
Leicester, Livingston county	13									
Lenox, Cattaraugus county	64						1			2
Leon, Cattaraugus county	7									
Le Ray, Jefferson county	39		1							3
Le Roy, Genesee county	22									
Lewis, Essex county	25		2							1
Lewis, Lewis county	16									1
Lewisboro, Westchester county	14		1							1
Lewiston, Niagara county	31		2						1	3
Lexington, Greene county	11									
Leydon, Lewis county	9		1							1
Liberty, Sullivan county	42		2			1			1	3
Lima, Livingston county	31				1					1
Lincklaen, Chenango county	11		2							
Lindley, Steuben county	2									
Lisbon, St. Lawrence county	57		1					1		6
Lisle, Broome county	38		1					2		1
Litchfield, Herkimer county	12									1
Little Falls, Herkimer county	134	1	8		1			2	11	11
Little Valley, Cattaraugus county	27	1	1						2	
Livingston, Columbia county	17									
Livonia, Livingston county	3									
Lloyd, Ulster county	28									
Locke, Cayuga county	12									2
LOCKPORT, Niagara county	111		4	2	3			3	5	9

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Lockport, Niagara county	26	....	1	......	......	......	.....	2	......	1
Lodi, Seneca county	24	....	......	......	......	......	......	1	......	1
LONG ISLAND CITY, Queens county	891	4	8	15	24	17	5	28	90	84
Long Lake, Hamilton county	10	....	......	......	......	......	......	2	......	1
Loraine, Jefferson county	15	....	......	......	......	......	......	......	......	2
Louisville, St. Lawrence county	17	....	......	......	1	1	......	......	......	......
Lowville, Lewis county	46	....	3	......	......	......	......	......	......	8
Lumberland, Sullivan county	3	....	......	......	......	......	......	......	......	......
Luzerne, Warren county	9	....	......	......	......	......	......	......	......	......
Lyme, Jefferson county	20	....	......	......	......	......	......	1	1	......
Lyndon, Cattaraugus county	11	....	......	......	......	......	......	......	......	......
Lyons, Wayne county	143	....	6	2	......	......	2	......	5	14
Lyonsdale, Lewis county	12	......	......	......	......	......	......	......	1	1
Lysander, Onondaga county	43	....	......	......	......	......	......	......	......	3
Macdonough, Chenango county	9	....	......	......	......	......	......	......	......	......
Macedon, Wayne county	45	1	......	......	......	......	1	......	1	2
Machias, Cattaraugus county	27	....	......	......	......	......	......	......	......	2
Macomb, St. Lawrence county	13	....	......	......	......	......	......	......	......	......
Madison, Madison county	49	....	......	......	......	......	......	3	4	2
Madrid, St. Lawrence county	32	....	2	......	1	......	......	......	......	......
Maine, Broome county	26	....	......	......	......	......	......	2	......	1

Malone, Franklin county	178	2	2		1	2	2	2	16	18
Malta, Saratoga county	16									
Mamakating, Sullivan county	52		1		1	2	2	2	1	2
Mamaroneck, Westchester county	59		1		3		1	1	3	1
Manchester, Ontario county	54								2	5
Manheim, Herkimer county	14									1
Manlius, Onondaga county	114		1	1				1	8	9
Mansfield, Cattaraugus county	12									
Marathon, Cortland county	31		1					1		1
Marbletown, Ulster county	56						1	2	3	8
Marcellus, Onondaga county	41	1							1	4
Marcy, Oneida county	16								1	2
Marilla, Erie county	27		1							
Marion, Wayne county	31						1			2
Marlborough, Ulster county	56		1		1					6
Marshall, Oneida county	21	1								1
Martinsburgh, Lewis county	30		1				1			2
Maryland, Otsego county	18									
Masonville, Delaware county	16									1
Massena, St. Lawrence county	47	2			1				1	6
Mayfield, Fulton county	33							1	1	3
Medina, Orleans county	62				1	1	2			5
Mendon, Monroe county	51			1			1			4
Mentz, Cayuga county	41									2
Meredith, Delaware county	21									
Mexico, Oswego county	66		1						2	4
Middleburgh, Schoharie county	58		2						2	
Middlebury, Wyoming county	32		1						1	1
Middlefield, Otsego county	38									2
Middlesex, Yates county	15								1	
MIDDLETOWN, Orange county	253	1	7	0	3	2	3	22	22	15

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC.— (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Middletown, Delaware county	29	......	1	......	......	......	......	......	......	2
Milan, Dutchess county	13	......	......	......	......	......	......	......	......	......
Milford, Otsego county	26	......	......	......	......	......	......	......	1	......
Milo, Yates county	29	......	1	......	......	......	......	......	1	1
Milton, Saratoga county	71	1	......	......	......	......	......	......	4	4
Mina, Chautauqua county	8	......	......	......	......	......	......	......	......	......
Minden, Montgomery county	19	......	1	......	......	......	......	......	1	......
Minerva, Essex county	8	......	......	......	......	......	......	......	......	1
Minisink, Orange county	16	......	......	......	......	......	......	......	......	......
Mohawk, Montgomery county	40	......	......	......	......	......	......	......	......	2
Moira, Franklin county	29	......	......	......	......	......	......	......	3	3
Monroe, Orange county	35	......	1	......	......	......	......	1	2	2
Montague, Lewis county	11	......	......	......	......	......	......	......	......	......
Montezuma, Cayuga county	14	......	......	......	......	......	......	......	......	......
Montgomery, Orange county	92	......	......	......	......	1	......	3	1	10
Montour, Schuyler county	37	......	......	......	......	......	......	......	1	......
Mooers, Clinton county	26	......	......	......	2	......	......	......	2	......
Moravia, Cayuga county	52	......	......	......	......	......	......	1	......	1
Moreau, Saratoga county	42	1	1	......	......	1	......	......	1	......
Morehouse, Hamilton county	4	......	......	......	......	......	......	......	......	......
Moriah, Essex county	85	......	2	......	......	......	......	6	3	3

Morris, Essex county	31	......	......	......	......	......	......	......	......	1
Morristown, St. Lawrence county	28	......	......	......	......	......	......	......	......	2
Mount Hope, Orange county	39	......	1	......	......	......	......	......	1	3
Mount Morris, Livingston county	67	......	......	......	......	......	1	......	1	3
Mount Pleasant, Westchester county	115	......	......	......	......	......	......	......	......	19
MOUNT VERNON, Westchester county	219	......	6	2	7	1	......	9	23	21
Murray, Orleans county	51	......	......	......	......	......	......	......	2	3
Nanticoke, Broome county	14	......	1	......	......	......	......	......	......	......
Naples, Ontario county	29	......	1	......	......	......	......	......	......	2
Napoli, Cattaraugus county	3	......	......	......	......	......	......	......	......	......
Nassau, Rensselaer county	44	......	......	......	......	......	......	......	1	1
Nelson, Madison county	17	......	......	......	......	......	......	......	......	......
Neversink, Sullivan county	6	......	......	......	......	......	......	......	......	......
New Albion, Cattaraugus county	19	......	......	......	......	......	......	......	......	......
Newark, Wayne county	54	1	1	......	1	......	......	......	2	6
Newark Valley, Tioga county	23	......	......	......	......	......	1	......	......	1
New Baltimore, Greene county	36	......	1	......	......	......	......	......	......	1
New Berlin, Chenango county	16	......	......	......	......	......	......	......	......	......
New Bremen, Lewis county	19	......	......	......	......	......	......	......	......	1
New Brighton, Richmond county	370	2	2	......	14	......	1	11	15	44
NEWBURGH, Orange county	537	2	4	3	3	11	3	11	35	61
Newburgh, Orange county	34	......	......	......	......	......	2	......	......	1
Newcastle, Westchester county	46	1	......	......	......	......	......	......	1	2
Newcomb, Essex county	4	......	......	......	......	......	......	......	......	......
Newfane, Niagara county	30	......	......	......	1	......	......	1	1	1
Newfield, Tompkins county	5	......	......	......	......	......	......	......	......	......
New Hartford, Oswego county	66	......	1	......	......	1	......	......	1	5
New Haven, Columbia county	31	......	......	......	......	......	......	......	......	1
New Hudson, Allegany county	0	......	......	......	......	......	......	......	......	......
New Lebanon, Columbia county	21	......	1	......	......	......	......	......	......	......
New Lisbon, Otsego county	18	......	......	......	......	......	......	......	......	......

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
New Paltz, Ulster county	51	......	2	......	......	......	1	......	......	6
Newport, Herkimer county	36	......	......	......	......	......	......	......	......	2
New Rochelle, Westchester county	7	......	......	......	......	......	......	......	......	......
New Rochelle, Westchester county	165	1	1	3	......	......	......	9	19	9
New Scotland, Albany county	34	......	......	......	......	......	......	......	......	2
Newstead, Erie county	30	......	1	......	......	......	......	1	......	......
Newtown, Queens county	471	......	8	5	3	6	5	24	49	36
New Utrecht, Kings county	186	4	2	......	7	......	4	4	21	11
New Windsor, Orange county	20	......	......	......	......	......	......	......	1	2
NEW YORK, New York county	43,564	189	384	175	1,250	625	352	1,969	3,558	5,162
Niagara, Niagara county	200	1	11	......	1	3	1	3	14	15
Nichols, Tioga county	16	......	......	......	......	......	......	......	......	......
Niles, Cayuga county	16	......	......	......	......	......	......	......	......	1
Niskayuna, Schenectady county	13	......	......	......	......	......	......	......	2	1
Norfolk, St. Lawrence county	15	......	......	......	......	......	......	......	......	2
Northampton, Fulton county	38	......	......	......	......	......	1	......	1	......
North Castle, Westchester county	28	......	......	......	......	......	......	......	......	1
North Collins, Westchester county	16	......	......	......	......	......	......	......	......	......
North Dansville, Livingston county	5	......	......	......	......	......	......	......	......	......
North East, Dutchess county	39	......	......	......	......	......	......	......	......	1
North Elba, Essex county	13	......	......	......	......	......	......	......	2	2

Northfield, Richmond county	94	......	......	......	......	......	1	1	6	7
North Greenbush, Rensselaer county	95	2	......	......	......	......	......	3	1	4
North Hempstead, Queens county	147	2	......	3	3	2	2	3	16	18
North Hudson, Essex county	6	......	......	......	......	......	......	......	......	......
North Norwich, Chenango county	13	......	......	......	......	......	......	......	2	......
North Salem, Westchester county	40	......	......	......	......	......	......	1	......	1
Northumberland, Saratoga county	17	......	......	......	......	......	......	......	......	......
Norway, Herkimer county	13	......	......	......	......	......	......	......	......	......
Norwich, Chenango county	15	......	......	......	......	......	......	......	......	1
Norwich, Chenango county	103	......	1	4	......	1	......	2	6	7
Nunda, Livingston county	44	1	......	......	......	......	......	......	......	2
Nyack, Rockland county	103	......	......	2	1	8	1	3	6	8
Oakfield, Genesee county	24	......	1	......	......	......	......	......	......	......
Ogden, Monroe county	53	......	2	......	......	......	......	......	1	3
OGDENSBURG, St. Lawrence county	220	5	4	1	1	0	1	23	22	26
Ohio, Herkimer county	11	......	......	......	......	......	1	......	......	......
Olean, Cattaraugus county	7	......	......	......	1	......	......	......	......	......
Olean, Cattaraugus county	162	2	2	......	2	1	1	2	12	15
Olive, Ulster county	27	......	......	......	......	......	......	......	......	......
Oneida, Madison county	65	......	......	......	1	......	......	4	3	5
Oneonta, Otsego county	28	......	......	......	......	......	......	......	2	1
Onondaga, Onondaga county	125	1	1	1	......	1	......	......	7	6
Ontario, Wayne county	47	......	......	......	......	......	......	......	2	3
Oppenheim, Fulton county	12	......	......	......	......	......	1	......	......	1
Orange, Schuyler county	11	......	......	......	......	......	......	......	1	......
Orangetown, Rockland county	107	......	1	......	1	2	2	6	2	4
Orangeville, Wyoming county	22	......	......	......	......	......	......	1	......	......
Orleans, Jefferson county	21	......	......	......	......	......	......	......	......	......
Orwell, Oswego county	0	......	......	......	......	......	......	......	......	......
Osceola, Lewis county	11	......	......	......	......	......	......	......	1	......
Ossian, Livingston county	4	......	......	......	......	......	......	......	......	......

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Ossining, Westchester county	64	......	......	......	......	......	......	......	......	19
Oswegatchie, St. Lawrence county	26	......	......	......	......	......	......	......	1	5
OSWEGO, Oswego county	352	0	9	2	15	0	0	2	22	32
Oswego, Oswego county	51	......	......	......	......	......	......	4	......	2
Otego, Otsego county	17	......	......	......	......	......	......	......	1	......
Otsego, Otsego county	40	......	......	......	......	......	......	2	......	1
Otisco, Onondaga county	0	......	......	......	......	......	......	......	......	......
Otselic, Chenango county	1	......	......	......	......	......	......	......	......	......
Otto, Cattaraugus county	14	......	1	......	......	1	......	......	......	1
Ovid, Seneca county	40	......	1	......	......	......	......	......	......	5
Owasco, Cayuga county	9	......	......	......	......	......	......	......	......	......
Owego, Tioga county	11	......	1	......	......	......	......	......	......	......
Owego, Tioga county	113	......	4	......	......	......	......	......	2	11
Oxford, Chenango county	55	......	2	......	......	......	......	......	1	1
Oyster Bay, Queens county	253	1	......	1	16	3	2	3	16	15
Palatine, Montgomery county	20	......	1	......	......	......	......	1	......	1
Palermo, Oswego county	22	......	......	......	......	......	......	......	1	......
Palmyra, Wayne county	78	......	1	......	......	......	1	......	......	9
Pamelia, Jefferson county	18	......	......	......	......	......	......	1	......	......
Paris, Oneida county	46	......	......	......	1	......	......	2	1	5
Parish, Oswego county	23	......	......	......	......	......	......	......	......	3

Parisville, St. Lawrence county	33	......	......	......	......	......	......	......	2	2
Parma, Monroe county	38	......	1	......	......	......	......	......	1	6
Patterson, Putnam county	25	......	......	......	......	......	......	......	......	......
Pavilion, Genesee county	1	......	......	......	......	......	......	......	......	......
Pawling, Dutchess county	31	......	......	......	......	......	1	......	......	3
Peekskill, Westchester county	208	......	......	1	......	3	12	4	10	22
Pelham, Westchester county	153	......	......	......	......	......	1	1	......	25
Pembroke, Genesee county	43	......	......	......	......	......	......	......	1	2
Pendleton, Niagara county	23	......	......	......	......	......	......	......	......	2
Penfield, Monroe county	59	......	......	......	......	......	......	......	1	3
Penn Yan, Yates county	76	......	1	1	1	......	......	......	2	9
Perrinton, Monroe county	69	......	4	......	......	......	......	......	1	5
Perry, Wyoming county	52	......	......	......	1	......	......	......	......	......
Perrysburgh, Cattaraugus county	19	......	......	......	......	......	......	......	......	3
Persia, Cattaraugus county	16	......	......	......	......	......	......	......	......	1
Perth, Fulton county	14	......	......	......	......	......	......	......	......	......
Peru, Clinton county	33	1	......	......	......	......	......	1	......	1
Petersburgh, Rensselaer county	26	......	1	......	2	......	......	......	......	1
Pharsalia, Chenango county	6	......	......	......	......	......	......	......	......	1
Phelps, Ontario county	75	......	3	......	......	......	......	......	3	5
Philadelphia, Jefferson county	18	......	......	......	......	......	......	1	......	......
Phillipstown, Putnam county	63	......	......	......	......	......	......	......	......	6
Pierrepont, St. Lawrence county	20	......	......	......	......	......	......	......	......	......
Pike, Wyoming county	23	......	1	......	......	......	......	......	......	1
Pine Plains, Dutchess county	20	1	......	......	......	......	......	......	......	2
Pinckney, Lewis county	7	......	......	......	......	......	......	......	......	......
Pitcairn, St. Lawrence county	6	......	......	......	......	......	......	......	......	......
Pitcher, Chenango county	9	......	......	......	......	......	......	......	......	......
Pittsfield, Otsego county	9	......	......	......	......	......	......	......	......	1
Pittsford, Monroe county	32	......	......	......	......	......	......	......	......	1
Pittstown, Rensselaer county	56	......	2	......	......	......	......	......	3	7

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Plainfield, Otsego county	10	......	......	......	......	......	......	......	......	......
Plattekill, Ulster county	20	......	......	......	......	......	......	......	......	......
Plattsburgh, Clinton county	19	......	......	......	......	......	......	3	......	1
Plattsburgh, Clinton county	118	2	1	1	......	......	......	8	10	12
Pleasant Valley, Dutchess county	27	......	......	......	......	......	......	......	......	......
Plymouth, Chenango county	11	......	......	......	......	......	......	......	......	......
Poestenkill, Rensselaer county	22	2	......	......	......	......	......	......	......	2
Poland, Chautauqua county	12	......	......	......	......	......	......	......	......	1
Pomfret, Chautauqua county	33	......	......	......	......	......	......	......	......	2
Pompey, Onondaga county	75	......	......	......	......	......	......	2	......	3
Portage, Livingston county	9	......	......	......	......	......	......	......	......	......
Port Chester, Westchester county	124	......	3	......	4	......	......	6	12	8
Porter, Niagara county	20	1	......	......	......	......	......	......	......	2
Port Jervis, Orange county	191	......	6	2	1	6	4	8	8	24
Portland, Chautauqua county	18	......	......	......	......	1	......	......	1	1
Port Richmond, Richmond county	87	......	2	2	......	......	2	1	7	5
Portville, Cattaraugus county	9	......	......	......	......	......	......	......	1	1
Potsdam, St. Lawrence county	66	......	......	......	1	......	......	......	......	9
Potsdam, St. Lawrence county	62	......	4	......	3	......	......	3	7	6
Potter, Yates county	13	......	......	......	......	......	......	......	......	......
POUGHKEEPSIE, Dutchess county	476	0	9	10	0	11	15	4	23	64

Poughkeepsie, Dutchess county	82						1		5	8
Poundridge, Westchester county	31									
Prattsburgh, Steuben county	25									
Prattsville, Greene county	18									1
Preble, Cortland county	10									1
Preston, Chautauqua county	6									1
Princetown, Schenectady county	15									1
Providence, Saratoga county	15									
Pulteney, Steuben county	6				1					
Putnam, Washington county	2									
Putnam Valley, Putnam county	16		1							
Queensbury, Warren county	32								1	4
Ramapo, Rockland county	102	2	1		2		1	3	2	6
Randolph, Cattaraugus county	17									1
Rathbone, Steuben county	8									
Reading, Schuyler county	8									
Redfield, Oswego county	11								1	
Redhook, Dutchess county	68				2				1	2
Red House, Cattaraugus county	5					1				
Remsen, Oneida county	26								2	2
Rensselaerville, Albany county	33				1					
Rhinebeck, Dutchess county	51							1	1	3
Richfield, Otsego county	44									1
Richford, Tioga county	28									1
Richland, Oswego county	55		1					4	2	9
Richmond, Ontario county	15									1
Richmondville, Schoharie county	51		1					1		3
Ridgeway, Orleans county	38									2
Riga, Monroe county	27						1			3
Ripley, Chautauqua county	39									4
Riverhead, Suffolk county	66		1	1			1	3		4

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
ROCHESTER, Monroe county	2,536	2	50	11	14	1	16	121	194	244
Rochester, Ulster county	37	......	1	......	......	......	1	1	1	2
Rockland, Sullivan county	38	......	2	......	......	1	......	......	1	......
Rodman, Jefferson county	8	......	......	......	......	......	......	......	......	1
ROME, Oneida county	242	3	4	0	0	0	1	16	11	30
Romulus, Seneca county	24	......	......	......	......	......	......	......	......	......
Root, Montgomery county	14	......	......	......	......	......	......	......	......	......
Rose, Wayne county	26	......	......	......	1	......	......	1	1	1
Roseboom, Otsego county	23	......	......	......	......	......	......	......	......	......
Rosendale, Ulster county	65	......	......	......	1	......	......	2	5	5
Rossie, St. Lawrence county	12	......	......	......	......	......	......	......	1	......
Rotterdam, Schenectady county	69	......	4	......	1	......	......	......	3	5
Roxbury, Delaware county	19	......	1	......	......	......	......	......	......	......
Royalton, Niagara county	45	......	......	......	......	......	......	......	......	2
Rush, Monroe county	22	......	......	......	......	......	......	......	2	3
Rushford, Allegany county	9	......	......	......	......	......	......	......	......	......
Russell, St. Lawrence county	23	......	......	3	......	......	......	......	......	......
Russia, Herkimer county	1	......	......	......	......	......	......	......	......	......
Rutland, Jefferson county	25	......	......	......	......	......	......	......	2	1
Rye, Westchester county	86	1	......	......	2	......	......	......	......	7
Sag Harbor, Suffolk county	45	......	......	......	......	......	......	2	7	4

St. Armand, Essex county	8	......	......	......	......	......	......	......	1	1
St. Johnsville, Montgomery county	44	......	3	......	......	......	......	2	......	3
Salamanca, Cattaraugus county	6	......	......	......	......	......	......	1	......	......
Salamanca, Cattaraugus county	55	......	2	......	......	......	......	10	4	4
Salem, Washington county	49	......	3	......	......	......	......	......	3	2
Salina, Onondaga county	56	......	1	......	1	......	......	......	1	3
Salisbury, Herkimer county	13	......	......	......	......	......	......	......	......	......
Sand Lake, Rensselaer county	54	......	1	......	......	......	1	......	3	9
Sandy Creek, Oswego county	44	......	......	......	......	......	......	......	......	......
Sanford, Broome county	26	......	......	......	......	......	......	......	......	2
Sangerfield, Oneida county	27	......	......	......	......	......	......	......	......	1
Santa Clara, Franklin county	10	......	......	......	......	......	......	......	2	......
Saranac, Clinton county	32	......	......	......	......	......	......	......	1	2
Saratoga, Saratoga county	60	......	......	......	2	......	......	1	......	6
Saratoga Springs, Saratoga county	292	1	......	......	......	......	2	14	20	31
Saratoga Springs, Saratoga county	15	......	......	......	1	......	......	......	......	......
Sardinia, Erie county	13	......	2	......	......	......	......	......	......	1
Saugerties, Ulster county	108	......	3	......	......	......	......	6	6	6
Saugerties, Ulster county	59	......	1	2	......	......	......	......	5	9
Savannah, Wayne county	23	......	1	......	......	......	......	......	......	2
Scarsdale, Westchester county	5	......	......	......	......	......	......	......	......	......
Schaghticoke, Rensselaer county	58	......	......	......	......	......	......	......	1	4
SCHENECTADY, Schenectady county	577	2	42	12	1	11	3	15	35	68
Schodack, Rensselaer county	69	......	3	......	......	......	......	1	......	3
Schoharie, Schoharie county	40	......	2	......	......	......	......	......	2	6
Schroeppel, Oswego county	42	......	......	......	......	......	......	2	......	2
Schroon, Essex county	20	......	......	......	......	......	......	......	......	......
Schuyler, Herkimer county	11	1	......	......	......	......	......	......	......	......
Schuyler Falls, Clinton county	13	......	......	......	......	......	1	......	......	......
Scio, Allegany county	22	......	1	......	......	3	......	......	......	3
Scipio, Cayuga county	26	......	......	......	1	......	......	......	......	1

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Scott, Cortland county	13	......	1	......	......	......	......	......	......	1
Scriba, Oswego county	32	......	1	1	......	......	......	......	......	4
Sempronius, Cayuga county	12	......	......	......	......	......	......	......	......	......
Seneca, Ontario county	58	......	3	......	......	1	......	......	......	2
Seneca Falls, Seneca county	6	......	......	......	......	......	......	......	1	......
Sennett, Cayuga county	32	......	......	......	......	......	......	......	......	3
Seward, Schoharie county	33	......	2	......	......	......	......	1	1	2
Shandaken, Ulster county	62	......	......	......	......	......	......	1	1	4
Sharon, Schoharie county	31	......	......	......	......	......	......	......	......	2
Shawangunk, Ulster county	21	......	......	1	......	1	......	......	......	......
Shelby, Orleans county	29	......	......	......	......	......	......	......	......	3
Sheldon, Wyoming county	25	......	......	......	......	......	......	......	......	2
Shelter Island, Suffolk county	10	......	......	......	......	......	......	......	1	......
Sherburne, Chenango county	37	......	......	......	......	......	......	......	2	2
Sheridan, Chautauqua county	11	......	......	......	......	......	......	......	......	......
Sherman, Chautauqua county	20	......	......	......	......	......	......	......	......	......
Sidney, Delaware county	39	......	1	1	......	......	......	......	1	1
Sing Sing, Westchester county	206	1	2	......	1	12	......	17	17	34
Skaneateles, Onondaga county	48	......	1	......	......	......	......	......	......	3
Smithfield, Madison county	8	......	......	......	......	......	......	......	......	......
Smithtown, Suffolk county	105	......	1	......	......	......	......	......	2	25

Smithville, Chenango county	13	....	......	......	......	......	......	......	1	......
Smyrna, Chenango county	13	....	......	......	......	......	......	......	......	1
Sodus, Wayne county	77	1	......	......	......	......	......	......	3	6
Solon, Cortland county	15	....	......	......	......	......	......	......	......	......
Somers, Westchester county	25	....	......	......	......	......	......	1	2	......
Somerset, Niagara county	25	....	......	......	......	......	......	......	......	4
Southampton, Suffolk county	113	....	1	......	......	......	......	......	3	5
South Bristol, Ontario county	5	....	......	......	......	......	......	......	......	......
South East, Putnam county	67	....	1	......	......	......	......	......	1	2
Southfield, Richmond county	37	....	......	1	......	......	......	1	10	......
Southold, Suffolk county	139	....	1	2	4	......	4	......	11	1
Southport, Chemung county	20	....	......	......	......	......	......	......	1	1
South Valley, Cattaraugus county	1	....	......	......	......	......	......	......	......	......
Spafford, Onondaga county	15	....	......	......	2	......	......	......	......	......
Sparta, Livingston county	8	....	......	......	......	......	......	......	1	......
Spencer, Tioga county	24	....	......	......	......	......	......	......	2	......
Springfield, Otsego county	22	....	......	......	......	1	......	......	......	......
Springport, Cayuga county	37	....	......	......	......	......	......	......	1	2
Springwater, Livingston county	17	....	......	......	......	......	......	......	......	1
Stafford, Genesee county	17	....	......	......	......	......	......	......	1	......
Stamford, Delaware county	39	....	2	......	......	......	......	1	......	3
Stanford, Dutchess county	18	....	......	......	......	......	......	......	......	......
Stark, Herkimer county	24	....	1	......	......	......	......	......	......	4
Starkey, Yates county	7	....	......	......	......	......	......	......	......	......
Stephentown, Rensselaer county	26	....	......	......	......	......	......	1	......	......
Sterling, Cayuga county	61	....	1	......	5	......	......	2	1	3
Steuben, Oneida county	5	....	......	......	......	......	......	......	......	......
Stillwater, Saratoga county	66	....	3	......	......	......	1	1	8	6
Stockbridge, Madison county	22	....	......	......	......	......	......	......	1	......
Stockholm, St. Lawrence county	29	1	1	......	......	......	......	......	1	2
Stockport, Columbia county	35	1	......	......	......	......	1	......	......	......

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC.— (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Stockton, Chautauqua county	30									2
Stony Creek, Warren county	8		1					1	1	
Stony Point, Rockland county	71							1	6	4
Stratford, Fulton county	8									
Stuyvesant, Columbia county	32		1					1		2
Sullivan, Madison county	45									4
Summer Hill, Cayuga county	9									
Summit, Schoharie county	38		2					1		2
Sweden, Monroe county	30					2				3
SYRACUSE, Onondaga county	1,552	15	43	10	2	1	9	30	120	216
Taghkanick, Columbia county	5								2	
Taylor, Cortland county	10									
Theresa, Jefferson county	26								1	
Thompson, Sullivan county	60		1							5
Throop, Cayuga county	16		1						1	2
Thurman, Warren county	7									
Thurston, Steuben county	6									
Ticonderoga, Essex county	8		1							1
Tioga, Tioga county	20									1
Tompkins, Delaware county	26									
Tonawanda, Erie county	9								1	

Torrey, Yates county	9									
Trenton, Oneida county	53				1				2	5
Triangle, Broome county	31									1
Troupsburgh, Steuben county	22		1							2
TROY, Rensselaer county	1,609	14	48	1	8	6	5	46	128	168
Truxton, Cortland county	15									
Tully, Onondaga county	22									
Turin, Lewis county	14		1							1
Tuscarora, Steuben county	7									
Tusten, Sullivan county	7									
Tuxedo, Orange county	19									1
Tyre, Seneca county	15							1		
Tyrone, Schuyler county	6									
Ulster, Ulster county	39								1	1
Ulysses, Tompkins county	37		1						1	1
Unadilla, Otsego county	49		2						1	3
Union, Broome county	43									3
Union Vale, Dutchess county	20									
Urbana, Steuben county	40									1
UTICA, Oneida county	993	0	11	3	4	1	2	49	58	144
Van Buren, Onondaga county	19	1								2
Van Etten, Chemung county	17							3		2
Varick, Seneca county	14									3
Venice, Cayuga county	24		1							1
Vernon, Oneida county	29								1	1
Verona, Oneida county	39							1		
Vestal, Broome county	22								1	1
Veteran, Chemung county	19									
Victor, Ontario county	42									6
Victory, Cayuga county	22									
Vienna, Oneida county	25								1	4

RECORD OF EACH REPORTING BOARD OF HEALTH, ETC.— (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Villenova, Chautauqua county	23									
Virgil, Cortland county	28				1					
Volney, Oswego county	40		1							1
Waddington, St. Lawrence county	31									3
Wales, Erie county	19									
Wallkill, Orange county	54		2					1		3
Walton, Delaware county	83	1	2			6			5	9
Walworth, Wayne county	18									1
Wappinger, Dutchess county	40								2	8
Wappinger's Falls, Dutchess county	71		3	2	1		1	1	1	17
Ward, Allegany county	2									
Warren, Herkimer county	9		1							
Warrensburgh, Warren county	33		1						1	1
Warsaw, Wyoming county	70				2	1			1	
Warwick, Orange county	41									1
Washington, Dutchess county	40						1			2
Waterford, Saratoga county	119		3					3	13	15
Waterloo, Seneca county	20		1							
Waterloo, Seneca county	67		2							8
WATERTOWN, Jefferson county	285	1	6	0	0	1	0	2	25	37

Watertown, Jefferson county	16									
Waterville, Oneida county	37		1				1			
Watervliet, Albany county	103				1		1		1	6
Watson, Lewis county	11								1	
Waverly, Franklin county	34		2						2	3
Waverly, Tioga county	64		2			1		1	6	12
Wawarsing, Ulster county	35									1
Wawayanda, Orange county	30									3
Wayland, Steuben county	8									
Wayne, Steuben county	2									
Webster, Monroe county	43							1	2	3
Wells, Hamilton county	3									
Wellsville, Allegany county	74					2	1			4
West Almond, Allegany county	10									
West Bloomfield, Ontario county	18									2
Westchester, Westchester county	0									
Westerlo, Albany county	37	1	1							3
Western, Oneida county	19						1			1
Westfield, Chautauqua county	13									1
Westfield, Richmond county	130	1	1	2	1				11	16
Westford, Otsego county	15									
West Monroe, Oswego county	16		1						2	
Westmoreland, Oneida county	26								1	4
Westport, Essex county	25								1	
West Seneca, Erie county	39		1						1	1
West Sparta, Livingston county	5									
West Troy, Albany county	326	2	7	2	4			14	20	30
West Turin, Lewis county	24									1
West Union, Steuben county	9									
Westville, Franklin county	21								1	1
Wethersfield, Wyoming county	13									1

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPITALS, villages in *italics* and towns in Roman

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	....	5,724	......	2,068	36.1	150.00	27	30
NEW YORK CITY	1,680,796	3,349	23.46	1,243	37.1	150.45	13	14
BROOKLYN	852,467	1,588	21.93	642	40 0	161.84	11	10
Gravesend	6,912	10	17.38	4	40.0	200.00	0	0
New Utrecht	5,000	10	24.00	1	10.0	100.00	0	0
Flatbush	8,000	11	16.50	4	36.4	90.91	0	0
LONG ISLAND CITY	30,396	60	24.01	17	28.3	113.33	0	0
Newtown	10,000	25	30.00	13	52.0	240.00	0	0
Oyster Bay	12,000	12	......	1	83.0	83.33	0	0
Hempstead	18,160	30	19.77	12	40.0	133.33	1	0
North Hempstead	8,000	10	15.00	4	40 0	100.00	0	0
Jamaica	10,089	19	22.75	6	19.0	106.00	1	0
Flushing	16,000	23	17.50	5	21.8	150.00	0	0
Southold	7,500	11	17.60	....	....	272.72	0	0
Sag Harbor	3,000	4	16.00	2	50.0	250.00	0	0
Huntington	8,100	10	15.03	1	10.0	......	0	0
New Brighton	15,000	34	27.20	5	21.9	88.23	0	1
Edgewater	12,000	30	30.00	12	40.0	266.67	0	0
Port Richmond	3,600	7	23.33	3	42.8	142.85	0	0
Westfield	7,000	11	18.85	3	27.3	181.81	0	1
YONKERS	31,949	36	13.50	17	47.2	250.00	0	0
Westchester	7,000	4	....	1	25.0	333.29	0	0
Mount Vernon	11,000	18	19.64	5	27.7	111.11	0	1
Port Chester	5,583	16	34.30	2	12.5	125.00	0	1
Sing Sing	6,500	14	25.84	2	14.3	......	0	0
New Rochelle	6,000	7	14.00	3	42.8	142.85	1	0
Peekskill	7,000	13	22.28	3	23.1	384.61	0	0
Rest of district	....	362	......	57	15.8	100.00	0	2
HUDSON VALLEY DISTRICT:								
Totals	....	977	......	220	21.8	122.00	7	45
ALBANY	100,000	210	25.20	50	23.8	204.76	0	20
COHOES	22,432	52	27.82	15	28.5	325.85	0	9
TROY	60,605	120	23.76	33	27.5	25.00	1	2
West Troy	13,000	36	33.23	4	12.5	194.44	1	3
Green Island	6,000	5	10.00	1	20.0	200.00	0	1
Lansingburgh	10,000	16	19.20	6	37.5	62.50	0	0
Hoosick Falls	6,000	11	22.00	2	18.2	181.81	0	1
Greenbush	8,000	11	16.50	4	36.4	191.90	0	1
Coxsackie	4,000	7	21.00	3	42.8	285.71	1	0
Catskill	4,930	9	21.60	5	55.5	111.11	0	0
HUDSON	10,027	19	22.80	3	15.8	158.00	0	0
KINGSTON	21,181	44	24.95	13	29.5	159.00	1	0
Ellenville	3,000	2	8.00	1	....	......	0	0
Marbletown	4,000	4	12.00	0	....	250.00	0	0
Esopus	4,736	3	7.70	1	33.3	......	0	0
Saugerties	4,000	4	12.00	2	50.0	......	0	0
POUGHKEEPSIE	22,836	44	23.10	8	18.7	68.50	0	1
Fishkill	10 732	13	15.00	0	....	......	0	0
Wappinger Falls	5,000	7	16.80	1	14.3	......	0	0
NEWBURGH	23,263	41	21.15	12	29.2	48.78	0	1
Port Jervis	9,500	11	13.90	3	27.3	272.73	0	1
MIDDLETOWN	11,918	12	12.50	3	25.0	333.33	1	0
Goshen	4,500	7	18.67	1	14.3	......	0	0
Haverstraw	7,000	13	22.28	6	44.0	77.00	0	1

YORK STATE BOARD OF HEALTH.

districts, cities and towns, during January, 1891.

type. For boundaries of *Sanitary Districts*, see Annual Summary.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhoeal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhoeal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
26	....	147	130	23	80	342	58	1,170	776	56	286	400	404	603	107	164	120	775
14	0	88	105	15	52	156	49	680	470	39	176	243	243	282	60	115	42	495
5	0	45	18	6	14	140	8	359	191	17	78	112	92	212	27	34	20	189
0	0	1	0	0	0	1	0	4	0	0	0	0	0	1	0	0	0	3
0	0	0	0	0	0	1	0	3	0	0	0	0	2	1	0	1	1	1
0	0	1	0	0	0	0	0	2	1	0	1	0	0	2	0	1	3	0
1	0	4	0	0	0	1	1	12	6	0	0	5	7	6	3	2	4	8
0	0	0	0	0	2	4	0	7	3	0	0	0	1	2	0	0	1	5
0	0	0	1	0	0	0	0	0	0	0	0	1	4	1	1	0	2	2
0	0	1	1	0	0	1	0	2	3	0	3	0	1	5	0	1	4	7
0	0	0	1	0	0	0	0	0	3	0	1	1	0	1	0	0	0	3
0	0	0	0	0	1	0	0	4	1	0	0	0	5	3	0	2	1	1
1	0	0	0	0	1	2	0	1	2	0	2	2	2	4	2	0	2	2
2	0	0	0	0	0	0	1	0	1	0	0	1	0	1	3	0	2	0
0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1
0	0	0	0	0	0	0	0	1	0	0	1	2	0	2	1	1	1	1
0	0	0	0	0	0	2	0	5	8	0	2	1	2	6	1	1	4	1
0	0	0	1	1	0	6	0	7	4	0	2	0	0	4	0	0	0	5
0	0	0	0	0	1	0	0	1	1	0	0	1	0	0	0	0	1	2
1	0	0	0	0	0	0	0	3	2	0	0	0	1	1	1	0	1	0
0	0	0	2	0	1	6	0	6	10	0	2	2	1	3	0	0	1	2
0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	1	0	8	1	0	0	1	1	1	0	0	2	2
0	0	1	0	0	0	0	0	0	3	0	1	1	1	4	0	0	1	3
0	0	0	0	0	0	0	0	0	7	0	1	0	0	3	0	2	0	1
0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	1	2
0	0	0	0	0	3	2	0	2	2	0	0	0	0	3	0	0	0	1
2	0	6	1	1	5	18	0	62	56	0	16	25	41	54	7	4	25	37
7	....	4	....	2	6	29	28	180	124	3	73	48	96	126	25	28	80	71
3	0	0	0	0	1	6	13	26	34	0	16	12	16	23	9	6	5	20
1	0	1	0	0	0	4	12	12	2	1	4	1	1	8	0	1	1	4
0	0	0	0	0	0	0	0	28	21	1	11	2	15	18	1	3	5	12
1	0	0	0	0	0	2	0	7	3	0	2	1	3	6	1	1	2	3
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0
0	0	0	0	0	0	1	0	4	2	0	1	2	1	2	0	0	1	2
0	0	0	0	0	1	0	0	4	1	0	0	0	0	1	0	0	1	2
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0	0	0	0	0	0	0	3	3	1	0	0	3	1	4	2	0	2	0
0	0	0	0	0	0	5	3	5	5	1	6	2	10	1	0	1	4	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
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0	0	0	0	0	1	0	0	0	1	0	1	0	1	2	1	0	0	0
0	0	0	0	0	1	0	0	10	8	0	0	2	4	7	1	1	2	4
0	0	1	0	1	0	0	0	0	2	0	0	1	0	2	1	1	1	0
0	0	1	0	1	0	1	0	1	1	0	1	0	2	1	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	1	1	1
0	0	0	0	0	0	0	0	4	1	0	2	0	2	1	0	1	0	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VAL. DIST.—(*Cont'd*):								
Nyack	5,000	3	7.20	....	....	......	0	0
Ramapo	5,000	2	......	1	50.0	......	0	0
Rest of district	....	271	......	42	15.5	63.00	2	4
ADIRONDACK & NORTH'N DIST.:								
Totals	....	279	......	47	16.7	71.42	1	3
Watertown	14,733	16	13.00	4	25.0	125.00	0	1
Ellisburgh	4,811	4	10.00	....	....	250.00	0	1
Clayton	4,314	4	12.00	2	50.0	......	0	0
Ogdensburg	12,000	12	12.00	5	41.8	......	0	0
Gouverneur	5,500	2	......	....	....	......	0	0
Potsdam	4,000	6	18.00	....	....	......	0	0
Malone	9,000	2	......	1	....	......	0	0
Plattsburgh	7,000	10	17.14	2	20.0	......	0	0
Crown Point	4,287	4	11.16	1	25.0	......	0	0
Glens Falls	10,000	16	19.20	2	12.5	62.50	0	1
Whitehall	4,000	8	24.00	3	37.5	......	0	0
Fort Edward	5,000	4	9.60	....	....	......	0	0
Fort Ann	4,267	5	11.20	....	....	......	0	0
Argyle	3,700	2	6.50	....	....	......	0	0
Salem	3,500	1	......	....	....	......	0	0
Greenwich	4,000	6	18.00	....	....	......	0	0
Rest of district	....	177	......	27	15.0	78.00	1	0
MOHAWK VALLEY DISTRICT:								
Totals	....	441	......	93	21.0	84.00	4	14
Schenectady	20,000	65	39.00	23	35.3	292.30	2	10
Schoharie	3,350	5	17.68	....	....	......	0	0
Cobleskill	3,371	4	14.12	....	....	......	0	0
Amsterdam	17,264	23	16.00	5	21.7	87.00	0	1
Fort Plain	3,500	1	......	....	....	......	0	0
Johnstown	6,000	13	25.00	6	50.0	......	0	0
Gloversville	13,845	25	21.75	6	24.0	200.00	0	1
Little Falls	8,500	......	......	....	....	......	0	0
Herkimer	3,000	5	20.00	....	....	200.00	1	0
Ilion	4,200	7	20.00	....	....	142.85	0	0
Utica	44,000	72	19.64	11	15.2	28.00	0	0
Whitestown	5,000	5	12.00	2	40.0	400.00	0	0
Rome	15,000	19	15.20	5	26.3	157.85	1	0
Boonville	4,000	4	12.00	1	25.0	......	0	0
Camden	3,400	6	21.18	1	16.6	......	0	0
Waterford	5,400	7	16.30	....	....	......	0	0
Ballston Spa	3,200	5	18.75	2	40.0	......	0	0
Saratoga Springs	10,000	18	21.80	4	22.2	111.11	0	0
Rest of district	....	157	......	26	16.1	66.66	0	2
SOUTHERN TIER DISTRICT:								
Totals	....	370	......	48	13.0	105.00	....	8
Binghamton	35.000	45	15.42	5	11.1	88.88	0	1
Owego	6,000	5	10.00	....	....	......	0	0
Candor	4,323	7	19.50	....	....	......	0	0
Waverly	5,000	3	7.20	1	33 3	......	0	0
Elmira	28,000	49	21.00	15	30.6	161.22	0	1
Hornellsville	10,000	14	18.20	1	7.5	......	0	0
Bath	3,500	2	......	....	....	......	0	0

FOR JANUARY — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhoeal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhoeal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
0	0	1	0	0	2	6	2	56	24	0	18	18	33	33	7	12	45	8
....	....	2	1	....	....	1	12	46	30	4	16	14	32	26	6	8	48	29
0	0	0	1	0	0	0	0	1	3	0	0	2	0	0	1	0	4	3
0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	4	2	1	0	0	0	1	0	0	1	3
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0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	3	0
0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	1	0	1	0	0	2	1	0	0	1	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
0	0	0	0	0	0	0	0	2	3	0	0	0	5	1	0	1	3	0
0	0	0	0	0	0	0	0	2	0	0	0	1	0	2	0	0	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	1	0
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0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	1	2	0
0	0	2	0	0	0	0	12	33	19	1	11	11	20	17	5	4	28	13
2	....	1	....	1	1	20	4	59	62	1	37	19	42	57	22	11	51	33
2	0	0	0	0	0	1	4	6	7	0	4	0	5	14	1	2	3	4
0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	2
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0
0	0	0	0	0	0	1	0	3	3	0	2	2	1	5	0	1	1	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	1	0	3	1	0	1	0	0	3	0	1	1	0
0	0	1	0	1	0	2	0	4	1	1	1	4	3	2	3	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2	0
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0	0	0	0	0	0	2	0	8	15	0	7	4	10	11	5	2	3	5
0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	1	1	0
0	0	0	0	0	0	2	0	3	3	0	2	0	1	2	1	0	3	1
0	0	0	0	0	0	0	0	2	1	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	1	0	2
0	0	0	0	0	0	0	0	0	2	0	0	1	0	2	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	2	0
0	0	0	0	0	0	1	0	4	1	0	3	1	2	0	1	0	2	3
0	0	0	0	0	1	7	0	21	26	0	16	2	19	11	8	3	29	12
....	1	9	1	....	1	19	....	52	38	1	25	12	26	28	12	22	32	83
0	0	0	0	0	1	2	0	3	8	0	5	0	5	8	1	3	3	5
0	0	0	0	0	0	0	0	1	0	0	0	1	0	3	0	0	0	0
0	0	0	0	0	0	0	0	2	1	0	1	0	0	2	0	0	0	1
0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0
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0	0	0	0	0	0	0	0	3	2	0	0	3	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years. *	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
SOUTHERN TIER DIST. (*Cont'd*):								
Corning	8,553	8	......	....	....	......	0	0
Olean	8,000	8	12.00	1	12.5	250.00	0	0
Salamanca	6,000	1	......	1	....	......	0	0
Jamestown	15,838	28	21.22	7	25.0	250.00	0	2
Westfield	3,000	4	16.00	1	25.0	......	0	0
Fredonia	3,000	4	16.00	....	....	......	0	0
Rest of district	....	192	......	16	13.0	75.00	0	4
EAST CENTRAL DISTRICT:								
Totals	....	343	......	66	13.5	80.00	....	11
Syracuse	88,000	96	13.10	32	33.3	125.00	0	6
Cortland	9,000	19	25.33	2	10.5	......	0	0
Homer	3,000	2	8.00	....	....	......	0	0
Oneida	6,018	8	16.00	4	50.0	250.00	0	0
Hamilton	4,000	2	......	....	....	......	0	0
Cazenovia	4,363	6	16.37	....	....	......	0	0
Brookfield	3,685	9	29.18	1	11.1	......	0	0
Norwich	5,500	4	......	1	25.0	......	0	0
Oneonta	7,000	7	12.00	1	14.3	285.71	0	1
Worcester	3,000	2	......	....	....	......	0	0
Cooperstown	3,000	1	......	....	....	......	0	0
Walton	3,540	6	20.50	1	16.7	......	0	0
Delhi	3,000	2	8.00	....	....	......	0	0
Rest of district	....	179	......	24	13.3	55.55	0	4
WEST CENTRAL DISTRICT:								
Totals	....	281	......	32	11.4	64.30	....	6
Auburn	26,000	38	17.61	4	21.0	210.25	0	2
Ithaca	10,000	13	15.60	1	7.7	......	0	0
Waterloo	4,500	3	......	1	33.3	......	0	0
Seneca Falls	6,000	10	20.00	1	10.0	200.00	0	0
Geneva	6,000	8	16.00	1	12.5	125.00	0	1
Canandaigua	6,300	7	13.33	2	28.5	......	0	0
Manchester	4,000	5	15.00	1	25.0	......	0	0
Phelps	7,000	6	10.28	....	....	166.67	0	1
Penn Yan	4,500	3	8.00	....	....	333.33	0	0
Batavia	7,0.0	2	......	1	50.0	......	0	0
Rest of district	....	186	......	20	10.5	47.40	0	2
LAKE ONTARIO & WEST. DIST:								
Totals	....	1,044	......	295	28.4	124.00	8	21
Buffalo	255,000	413	19.80	172	41.6	174.35	7	10
Tonawanda	5,000	9	21.60	3	33.3	333.33	0	0
Amherst	4,578	1	......	....	....	......	0	0
Lockport	15,000	7	......	1	14.3	......	0	0
Niagara	7,000	16	27.42	6	37.5	62.50	0	1
Medina	4,000	8	24.00	3	37.5	125.00	0	0
Albion	5,000	7	16.80	....	....	142.85	0	1
Brockport	4,500	5	13.33	1	20.0	......	0	0
Rochester	130,000	160	12.00	44	27.5	112.50	0	1
Palmyra	4,800	9	22.50	....	....	......	0	0
Newark	3,500	6	20.56	1	16.7	......	0	0
Lyons	6,000	14	28.00	....	....	71.43	0	0

JANUARY — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	1	2	0	2	0	0	0	1	0	2	0
0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	1	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	1	3	0	0	0	1	0	2	8	0	3	1	1	2	2	2	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	1
0	0	5	1	0	0	8	0	27	12	0	10	6	16	5	2	10	20	66
1	....	3	....	1	2	5	4	52	44	2	14	11	36	43	10	9	64	51
0	0	0	0	0	2	2	2	18	18	0	1	2	9	11	1	3	8	18
0	0	1	0	0	0	0	0	0	2	1	0	2	4	2	0	0	6	1
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0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
1	0	1	0	1	0	3	0	28	19	1	10	4	16	26	8	5	39	13
2	....	2	....	2	1	4	1	41	29	1	14	14	31	38	12	11	58	19
0	0	0	0	1	0	1	0	9	5	0	2	0	4	2	1	1	8	2
0	0	0	0	0	0	0	0	1	2	0	0	1	2	4	1	1	1	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1
2	0	0	0	0	0	0	0	0	1	0	2	1	0	1	0	1	1	1
0	0	0	0	0	0	0	0	0	1	0	0	1	1	2	1	0	1	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	2	0
0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
0	0	1	0	1	1	3	1	28	18	1	10	11	22	23	9	7	35	13
6	....	14	8	1	1	69	1	161	107	13	68	30	70	120	26	35	75	210
2	0	2	7	1	0	42	1	71	42	9	24	11	17	62	6	16	13	70
0	0	1	0	0	0	2	0	1	0	0	0	0	0	0	0	0	2	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	4	0	0	0	0	1	0	1	0	1	0
0	0	0	0	0	0	1	0	1	2	0	1	0	3	2	0	2	0	4
0	0	0	1	0	0	0	0	1	0	0	1	0	2	0	0	0	2	1
0	0	0	0	0	0	0	0	0	1	1	0	0	1	3	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	1	0
0	0	6	0	0	0	11	0	30	24	2	11	9	12	19	9	5	10	11
0	0	0	0	0	0	0	0	0	3	0	1	0	0	2	0	1	2	0
0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	0	0	2	0
1	0	0	0	0	0	0	0	4	3	0	1	0	0	1	0	0	4	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
LAKE ONTARIO & WEST. DIST.—(*Concluded*):								
Clyde	3,000	1	16.00	0	.....	......	0	0
OSWEGO	21,826	30	16.50	9	30.0	200.00	0	2
Richland	4,000	8	24.00	2	25.0	250.00	0	0
Rest of district	....	347	......	56	15.8	68.60	1	6
Totals for the State	....	9,549	......	2,868	30.0	132.50	47	138
Average for Jan. for past six years	....	8,407	......	2,550	30.2	150.24	39	84

REMARKS.—The reported mortality for January is about 800 greater than that of the prece-
Districts. The mortality is less by 3,000 than that of January, 1890, but there is no basis of
year ago. The proportion of deaths from all zymotic diseases is a little less than in December and
fever, measles and whooping cough than in December. Diphtheria and typhoid fever caused
in Albany, Cohoes and Schenectady. Small-pox appeared in Jamestown, where a number of cases
Cerebro-spinal fever shows an increase of nineteen deaths over last month. Acute respiratory
an increase of nearly 200 deaths. There is also a very considerable increase in the reported
unclassified causes are likewise increased. A number of deaths have been returned from
though under conditions varying from those of a year ago. Mortality reports from 137 cities
annually.

JANUARY — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0
0	0	3	0	0	0	1	0	4	1	0	4	0	4	3	0	1	1	6
0	0	0	0	0	0	2	0	1	1	0	0	0	0	2	1	0	1	0
3	0	2	0	0	1	11	0	43	29	1	24	9	26	24	9	9	34	115
44	1	182	140	30	92	489	103	1,761	1,210	81	533	548	737	1,041	220	288	523	1251
61	10	161	135	36	81	566	89	1,766	1,167	90	411	416	529	855	190	251	609	863

ding month, the increase being in the Maritime, Hudson Valley and Lake Ontario and Western
comparison between these months, as about 4,000 deaths occurred from epidemic influenza a
less than the average for January for the past six years. There were more deaths from scarlet
fewer deaths; from the latter, however, there has been an epidemic prevalence during the month
have occurred, the original case having come there from Newark, N. J.; one death has occurred.
diseases caused the same number of deaths as in December; from consumption there has been
mortality from diseases of the urinary and circulatory systems, and deaths from old age and
epidemic influenza from various parts of the State, and it is believed to have shown itself,
and large towns, having a total population of 4,280,000, give a death rate of 21.50 per 1,000

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPITALS, villages in *italics* and towns in Roman

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	....	5,050	......	1,944	38.7	164.56	23	24
NEW YORK CITY	1,680,796	3,026	23.40	1,208	40.0	172.00	18	11
BROOKLYN	852,467	1,424	21.72	569	40 0	170.65	4	8
Gravesend	6,912	4	......	1	25.0	250.00	0	0
New Utrecht	5,000	15	36.00	1	6.6	......	0	0
Flatbush	8,000	11	......	6	54.5	363.63	0	0
LONG ISLAND CITY	30,396	59	23.26	27	45.3	83.35	0	0
Newtown	10,600	23	27.60	11	47.8	304 35	0	0
Oyster Bay	12,000	17	17.00	4	24.5	120.40	0	0
Hempstead	18,160	1	......	1	....	......	0	0
North Hempstead	8,000	11	16.50	4	36.4	191.90	1	0
Jamacia	10,089	18	21.50	8	44.4	277.77	0	0
Flushing	16,000	26	19.50	7	26.9	76.90	0	1
Southold	7,500	9	14.40	...	....	......	0	0
Sag Harbor	3,000	3	12.00	2	66.6	......	0	0
Huntington	8,100	10	15.00	2	20.0	100.00	0	0
New Brighton	15,000	14	......	3	21.4	....	0	0
Edgewater	12,000	27	27.00	6	22.2	74.00	0	0
Port Richmond	3,600	7	23.33	....	....	285.70	0	2
Westfield	7,000	8	13.80	1	12.5	......	0	0
YONKERS	31,949	47	17.93	21	44.7	127.80	0	0
Mount Vernon	11,000	18	19.63	4	22.2	222.22	0	0
Port Chester	5,583	19	40.80	8	39.0	526.32	0	0
Sing Sing	9,500	11	20.30	4	36.3	191.91	0	0
New Rochelle	6,000	5	10.00	1	12.1	......	0	0
Peekskill	7,000	10	17.15	2	20.0	100.00	0	0
Rest of district	....	227	......	47	20.0	44.70	0	2
HUDSON VALLEY DISTRICT:								
Totals	....	904	......	197	21.0	131.30	4	52
ALBANY	100,000	203	24.36	52	25.8	200.00	0	27
COHOES	22,432	49	26.20	9	18.4	408.18	0	15
TROY	60,605	126	24.95	22	18.8	47.00	0	1
West Troy	13,000	31	28.60	6	19.0	98.50	0	2
Green Island	6,000	8	16.00	4	50.0	......	0	0
Lansingburgh	10,000	13	15.60	4	30.8	307.75	0	1
Hoosick Falls	6,000	3	......	1	33.3	......	0	0
Greenbush	8,000	8	12.00	3	37.5	......	0	0
Coxsackie	4,000	8	24.00	....	....	......	0	0
Catskill	4,930	12	28.80	4	33.3	......	0	0
HUDSON	10,027	13	15.60	6	46.1	384.60	0	0
KINGSTON	21,181	31	17.65	6	19.0	190.15	1	0
Ellenville	3,000	2	6.00	....	....	......	0	0
Marbletown	4,000	3	9.00	....	....	......	0	0
Esopus	4,736	7	17.89	1	14.3	285.70	0	0
Saugerties	4,000	3	9.00	1	33.3	......	0	0
POUGHKEEPSIE	22,836	34	17.88	9	26.5	147.00	0	1
Fishkill	10,732	8	......	2	40.0	200.00	1	0
Wappinger Falls	5,000	2	......	1	50.0	......	0	0
NEWBURGH	23,263	36	18.56	11	30.5	55.55	0	0
Port Jervis	9,500	13	16.42	5	38.4	......	0	0
Middletown	11,918	10	......	4	40.0	......	0	0
Goshen	4,500	8	21.33	....	....	......	0	0
Nyack	5,000	4	9.60	2	50.0	......	0	0
Ramapo	5,000	8	19.20	1	12.5	125.00	0	0
Rest of district	....	261	......	43	16.5	84.61	2	5

YORK STATE BOARD OF HEALTH.

districts, cities and towns, during February, 1891.

type. For boundaries of *Sanitary Districts,* see Annual Summary.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
18	....	173	96	44	60	314	75	1,033	602	72	267	329	320	528	99	178	123	672
8	0	115	63	29	36	185	52	606	378	47	164	214	156	258	63	128	44	451
8	0	45	27	13	20	102	16	311	142	20	76	84	112	201	24	35	22	154
0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	2	4	0	0	0	3	3	2	0	1	0
0	0	2	0	0	0	2	0	2	0	0	0	2	2	0	0	0	0	1
0	0	0	1	0	0	4	0	16	5	0	3	4	5	6	0	2	6	7
1	0	1	4	0	0	1	0	1	1	0	3	0	1	3	0	0	2	5
1	0	0	0	0	1	0	0	4	1	0	0	0	1	2	1	1	4	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	1	0	0	0	0	3	1	1	1	0	2	0	0	0	0	1
0	0	1	0	0	0	2	2	1	1	0	0	3	0	1	0	1	1	5
0	0	0	0	0	1	0	0	4	2	1	2	2	3	4	1	0	1	4
0	0	0	0	0	0	0	0	3	0	0	0	1	2	2	0	1	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	1	0	0	5	0	0	0	0	1	1	0	0	2	0
0	0	0	0	0	0	0	0	7	2	1	0	0	1	2	0	0	1	0
0	0	0	0	1	0	1	0	6	4	0	1	2	2	0	1	1	2	6
0	0	0	0	0	0	0	0	2	0	0	1	0	1	1	0	0	0	0
0	0	0	0	0	0	0	0	2	2	0	1	0	2	0	1	0	0	0
0	0	1	0	0	0	4	1	12	8	1	2	2	1	9	0	1	2	3
0	0	0	0	0	0	4	0	1	2	0	1	0	2	2	0	0	4	2
0	0	6	0	0	0	4	0	1	0	0	0	2	1	2	0	0	0	3
0	0	1	0	1	0	0	0	0	1	0	0	1	0	3	0	2	0	2
0	0	0	0	0	0	0	0	3	0	0	0	0	0	1	0	0	1	0
0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	1	1	4	0
0	0	0	0	0	1	5	3	38	46	1	12	11	22	26	5	5	25	25
3	....	6	2	1	8	28	16	172	105	10	59	42	85	125	20	18	85	63
0	0	0	0	0	0	11	2	44	18	0	14	15	14	25	5	4	7	17
0	0	2	0	0	0	0	3	3	7	1	3	2	0	6	1	1	1	4
0	0	0	0	1	2	2	0	29	18	2	9	6	11	21	2	2	14	6
0	0	0	0	0	0	1	0	10	1	0	3	1	4	6	0	1	1	1
0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	2	3
0	0	0	0	0	0	2	0	4	1	1	0	0	1	1	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	2	1	0	0	2	1	0	0	0	2
0	0	0	0	0	0	0	0	1	4	0	0	0	0	1	0	0	1	1
0	0	0	0	0	0	2	2	1	3	0	0	0	0	4	0	0	0	0
0	0	0	0	0	0	1	4	2	0	0	1	0	2	1	0	2	0	0
0	0	2	0	0	0	2	1	7	2	0	3	3	4	1	2	0	3	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0
0	0	0	0	0	0	2	0	4	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
2	0	0	0	0	0	0	2	6	4	0	3	0	2	4	1	1	5	2
0	0	0	0	0	0	0	0	2	1	0	1	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
0	0	0	0	0	1	1	0	6	6	1	5	1	2	6	0	1	5	1
0	0	0	0	0	0	0	0	3	3	0	0	0	0	6	0	1	0	0
0	0	0	0	0	0	0	0	1	0	0	0	1	2	1	0	0	1	4
0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	5	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	2	1	2	0
1	0	2	2	0	4	4	2	46	31	4	17	11	37	36	5	4	[illegible]	15

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever	Typhoid fever.
ADIRONDACK & NORTH'N DIST.: Totals	....	302	......	66	25.5	50.01	1	3
Watertown	14,733	23	18.75	4	17.4	......	0	0
Ellisburgh	4,811	7	17.50	2	28.5	.....	0	0
Cape Vincent	3,143	2	......	....	....	......	0	0
Clayton	4,314	3	......	1	33.3	......	0	0
Ogdensburgh	12,000	8	......	2	25.0	125.00	0	0
Gouverneur	5,500	5	10.90	2	40.0	200.00	0	0
Potsdam	4,000	3	9.00	....	....	......	0	0
Malone	9,000	12	......	2	16.7	......	0	0
Plattsburgh	7,000	6	......	1	16.7	......	0	0
Glens Falls	10,000	......	......	....	....	......	0	0
Whitehall	4,000	6	18.00	3	50.0	166.67	0	0
Fort Edward	5,000	7	16.80	1	14.3	......	0	0
Fort Ann	4,267	8	22.32	1	12.5	......	0	0
Salem	3,500	4	13.70	2	50.0	......	0	0
Greenwich	4,000	6	18.00	1	16.7	......	0	0
Rest of district	....	202	......	44	22.0	80.00	1	3
MOHAWK VALLEY DISTRICT: Totals	....	410	......	83	20.2	110.00	1	12
Schenectady	20,000	51	30.60	13	24.0	240.00	0	4
Schoharie	3,350	5	17.91	....	....	410.00	0	2
Cobleskill	3.371	3	11.00	1	33.3	......	0	0
Amsterdam	17,264	23	16.00	3	13.0	173.30	0	1
Fort Plain	3,500	5	17.30	....	....	......	0	0
Johnstown	6,000	5	10.00	....	....	......	0	0
Gloversville	13,845	14	12.50	6	42.8	285.71	0	0
Little Falls	8,500	7	......	....	....	......	0	0
Herkimer	3,000	6	24.00	1	16.7	......	0	0
Ilion	4,200	6	17.14	....	....	166.67	0	1
Utica	44,000	68	18.55	23	33.8	176.50	0	1
Whitestown	5,000	6	14.40	....	....	......	0	0
Rome	15,000	19	15.20	3	16.0	53.00	0	0
Boonville	4,000	3	9.00	....	....	......	0	0
Camden	3,400	7	24.70	3	42.8	......	0	0
Waterford	5,400	8	17.78	1	12.5	125.00	0	1
Ballston Spa	3,200	3	......	2	66.5	......	0	0
Saratoga Springs	10,000	15	18.00	2	13.3	......	0	0
Rest of district	....	156	.. ...	25	16.0	62.50	1	2
SOUTHERN TIER DISTRICT: Totals	....	356	......	71	20.0	90.00	5	8
Binghamton	35,000	56	18,60	14	25.0	135.00	0	4
Owego	6,000	7	14.00	2	28.5	......	0	0
Candor	4,323	3	......	....	....	......	0	0
Waverly	5,000	3	......	....	....	......	0	0
Elmira	28,000	31	13.28	8	26.4	32 26	0	0
Hornellsville	10,000	9	......	1	11.1	111.11	1	0
Bath	3,500	3	10.25	2	66.6	......	0	0
Corning	8,553	13	18.24	2	....	......	0	1
Olean	8,000	14	21.00	5	35.7	......	0	0
Salamanca	6,000	3	......	1	33.3	333.33	0	0
Jamestown	15,838	23	17.27	4	17.4	87.50	2	0
Westfield	3,000	4	16.00	....	..	......	0	0
Fredonia	3,000	3	12.00	....	....	......	0	0
Rest of district	....	184	......	32	17.7	94.45	2	3
EAST CENTRAL DISTRICT: Totals	....	367	......	71	19.2	78.80	2	8
Syracuse	88,000	103	15.20	29	28.5	128.85	1	3
Baldwinsville	3,000	2	8.00	....	....	......	0	0
Cortland	9,000	7	......	2	28.5	.....	0	0

FEBRUARY — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
....	....	2	....	....	1	7	3	45	44	3	21	12	31	33	9	12	42	33
0	0	0	0	0	0	0	0	2	5	0	0	0	0	5	1	1	4	5
0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	1	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	1	1	3
0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0
0	0	1	0	0	0	0	0	2	4	0	1	0	1	0	0	1	1	1
0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	3	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	1	1	0	0	0	0	1	0	0	2	0
0	0	0	0	0	0	0	0	2	1	0	0	0	1	1	1	0	1	0
0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	1	1	0
0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	1	0	0
0	0	0	0	0	0	0	0	2	1	0	0	0	0	2	0	0	1	0
0	0	1	0	0	0	6	2	31	26	2	18	11	25	19	7	6	26	18
4	....	3	....	2	3	12	10	69	35	2	27	31	43	65	9	11	41	30
3	0	0	0	0	1	1	3	7	8	0	0	2	7	6	1	4	0	4
0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0
0	0	0	0	0	1	1	1	1	3	0	1	1	2	4	0	0	5	2
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0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0
0	0	1	0	0	0	3	0	0	1	0	0	0	2	3	1	0	1	2
0	0	0	0	0	0	0	0	2	0	0	0	1	2	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	2	0
0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0	1	0
0	0	1	0	0	0	4	6	12	0	0	7	7	7	17	1	0	2	3
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	3	0
0	0	0	0	0	0	1	0	6	1	0	3	1	2	1	0	1	2	1
0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2	3
0	0	0	0	0	0	0	0	0	2	1	0	1	1	1	0	0	1	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	1	4	0	1	4	0	1	0	0	3	1
1	0	1	0	2	1	2	0	32	16	1	9	10	15	27	4	4	15	13
....	....	4	4	1	1	6	4	65	32	1	22	17	43	39	10	22	44	28
0	0	0	0	0	1	2	1	11	4	0	7	1	6	7	1	5	2	3
0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	1	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0
0	0	0	0	0	0	0	1	2	5	1	1	1	5	7	1	1	3	3
0	0	0	0	0	0	0	0	2	2	0	2	0	0	1	0	0	0	2
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
0	0	0	0	0	0	2	0	3	2	0	0	1	0	1	0	2	0	1
0	0	0	0	0	0	0	0	2	0	0	1	1	2	2	0	0	2	4
0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	6	2	0	2	2	5	2	0	0	2	0
0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0
0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0
0	0	4	4	1	0	2	1	33	16	0	9	10	23	16	4	13	32	11
2	....	2	2	....	4	5	2	62	42	5	23	28	35	45	12	10	49	29
1	0	1	0	0	2	3	1	16	17	1	10	7	8	8	4	4	0	
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	
0	0	0	0	0	0	0	0	3	0	1	0	0	1	1	0	0	0	

MONTHLY BULLETIN FOR

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DIST.—(*Cont'd*):								
Homer	3,000	3	12.00	1	33.3	......	0	0
Oneida	6,018	3	......	....	....	......	0	0
Hamilton	4,000	3	9.00	....	....	......	0	0
Cazenovia	4,363	9	24.54	1	11.1	......	0	0
Brookfield	3,685	5	16.22	....	....	......	0	0
Norwich	5,500	8	17.45	2	25.0	125.00	0	0
Oneonta	7,000	4	......	....	....	......	0	0
Worcester	3,000	2	8.00	....	....	......	0	0
Cooperstown	3,000	3	12.00	2	16.6	......	0	0
Walton	3,540	10	33.90	1	10.0	200.00	1	1
Delhi	3,000	1	......	....	....	......	0	0
Rest of district	....	204	......	33	16.2	60.00	0	4
WEST CENTRAL DISTRICT:								
Totals	....	332	......	55	17.0	14.75	1	....
AUBURN	26,000	43	19.84	15	34.8	70.00	1	0
ITHACA	10,000	14	16.80	....	....	71.43	0	0
Waterloo	4,500	2	....	1	50.0	......	0	0
Seneca Falls	6,000	8	16.00	....	....	125.00	0	0
Geneva	6,000	15	30.00	....	....	133.33	0	0
Canandaigua	6,300	8	15.24	1	12.5	125.00	0	0
Manchester	4,000	4	12.00	....	....	250.00	0	0
Phelps	7,000	8	13.71	....	....	......	0	0
Penn Yan	4,500	2	......	....	....	......	0	0
Batavia	7,000	14	24.00	2	14.3	142.85	0	0
Dansville	3,700	7	22.54	2	28.5	......	0	0
Le Roy	5,000	5	12.00	1	20.0	......	0	0
Rest of district	....	202	......	33	16.5	50.00	0	0
LAKE ONTARIO & WEST. DIST.:								
Totals	....	983	......	322	32.8	132.42	4	20
BUFFALO	255,000	443	22.58	192	43.4	124.13	3	4
Tonawanda	7,000	21	36.00	8	38.1	333.33	0	0
Amherst	4,578	11	28.70	2	18.1	454.54	0	4
LOCKPORT	15,000	5	......	1	20.0	600.00	0	0
Niagara	7,000	8	13.86	3	37.5	375.00	0	2
Medina	4,000	2	6.00	....	....	500.00	0	0
Albion	5,000	4	9.60	....	....	......	0	0
Brockport	4,500	6	16.00	1	16.7	......	0	0
ROCHESTER	138,327	206	17.82	62	30.5	82.00	0	3
Palmyra	4,800	5	12.50	....	....	......	0	0
Newark	3,500	5	17.14	....	....	......	0	0
Lyons	6,000	12	24.00	4	33.3	......	0	0
Clyde	3,000	5	20.00	2	40.0	......	0	0
OSWEGO	21,826	18	10.00	3	11.1	111.11	0	1
Fulton	4,000	5	15.00	....	....	......	0	0
Richland	4,000	14	......	2	14.3	357.10	0	0
Rest of district	....	213	......	42	20.0	94.00	1	6
Totals for the State	....	8,704	......	2,813	32.5	141.75	41	127
Average for Feb. for past six years	....	7,490	......	2,448	32.7	155.53	39	67

REMARKS.—The reported mortality for February is very nearly the same as that of February,
were 310 deaths per day, in January 308; the increase is in the western districts of the State,
forty-three to forty-one per day. The increase, which is moderate, is in scarlet fever and
the prevalence, during both February and January, of winter diarrhœa, the mortality from it
the Hudson Valley district, nearly all of them having occurred in Albany, Cohoes, Schenectady
the latter. The mortality from diphtheria continues to decrease. From acute respiratory
years show a usual increase from January through March; it is now in part due to the moderate
of death from numerous localities; bulletins from western States have shown its considerably
the case a year ago) but rather have diminished. In the other groups of local diseases there is
4,300,000, give a death rate of 21.25 per 1,000 annually.

FEBRUARY — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhoeal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhoeal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0
0	0	0	0	0	0	0	0	1	1	0	1	0	1	3	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	3	0
1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	2	0	0	1	2	1	1	0	0	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	1	2	0	2	2	1	36	18	3	11	18	20	29	7	5	30	15
2	....	5	2	4	1	4	2	40	33	2	22	22	42	40	14	8	49	39
0	0	0	0	1	0	1	0	2	6	0	3	1	5	9	0	1	0	13
0	0	0	0	0	0	1	0	0	1	0	0	3	3	1	1	1	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
1	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	2	2
0	0	1	0	0	0	0	1	1	2	0	2	2	3	0	1	0	1	1
0	0	0	0	1	0	0	0	1	2	0	0	1	0	1	0	0	1	1
0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1	0	4	0
0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	1	4	2	0	1	1	0	0	2	0	2	0
0	0	0	0	0	0	0	0	0	2	0	1	0	0	3	0	0	0	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	2
1	0	4	1	2	1	1	0	31	16	1	14	14	27	22	9	5	37	16
3	....	8	21	6	3	43	9	197	92	12	76	41	73	128	32	31	71	113
0	0	4	12	4	0	25	3	86	43	8	43	21	20	68	10	14	9	66
0	0	0	7	0	0	0	0	3	3	0	0	0	3	1	0	1	2	1
0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	2	0	2	0
0	0	0	0	0	0	2	1	0	1	0	0	0	0	0	0	0	1	0
0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	3
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	1
2	0	0	0	1	2	6	3	54	17	1	12	6	19	36	0	4	13	18
0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	1	0
0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	1	0	1	0
0	0	0	0	0	0	0	0	5	2	0	0	0	2	0	0	0	2	1
0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	1	0
0	0	0	0	0	0	0	0	3	1	0	2	1	4	3	0	0	2	1
0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	1	0	0	0
0	0	0	0	0	0	5	0	3	0	1	0	1	1	0	1	0	1	1
1	0	3	2	0	1	5	1	39	23	2	14	7	16	18	7	11	36	20
32	....	203	127	58	81	419	121	1,683	985	107	517	522	672	1,003	205	290	504	1007
50	8	164	126	41	88	501	81	1,450	1,023	27	381	408	500	802	74	228	604	714

1890, and about 1,200 greater than the average during this month for the past six years. There
The proportion of deaths from zymotic diseases is a little larger than that of January, being as
diarrhoeal diseases. There has been reported from numerous localities throughout the State
not being great, however. Of the 127 deaths from typhoid fever, fifty-two were reported from
and West Troy, in the two former there being a large increase, the epidemic having abated in
diseases there was an increase from fifty-seven per day in January to sixty; the reports of six
prevalence in mild form during the month of epidemic influenza, which is reported as the cause
earlier and more fatal prevalence. The deaths from consumption have not increased (as was
little variation. Mortality reports from 137 cities and large towns, having a total population of

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPITALS, villages in *italics* and towns in Roman

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	....	6,337	......	2,273	......	......	31	28
NEW YORK CITY	1,680,796	3,854	27.12	1,433	37.2	139.81	24	17
BROOKLYN	862,155	1,780	24.30	661	37.0	147.10	6	5
Gravesend	6,912	8	13.10	4	50.0	......	0	0
New Utrecht	5 000	10	24.00	1	10.0	......	0	0
Flatbush	8.000	18	27.00	6	33.3	166.67	0	1
LONG ISLAND CITY	30,396	56	22,10	24	42.9	107.10	0	0
Newtown	10,000	38	......	16	42.1	157.90	0	0
Oyster Bay	12,000	18	18,00	1	5.6	......	0	0
Hempstead	18,160	30	19.88	5	16.7	33.33	0	0
North Hempstead	8,000	6	......	2	33.3	......	0	0
Jamaica	10,089	23	27.32	10	43.5	......	0	0
Flushing	16,000	30	22,50	10	33.3	133.33	0	0
Southold	7,500	10	16.00	1	16.7	......	0	0
Sag Harbor	3,000	8	12.00	......	......	......	0	0
Huntington	8,100	19	27.42	4	21.0	......	0	0
New Brighton	15,000	29	23.20	7	24,1	33.70	0	0
Port Richmond	3,600	13	43.33	3	23.0	77.00	0	0
Westfield	7,000	9	15 43	4	44.4	111.11	1	0
YONKERS	31,949	54	20.25	10	18.5	166.67	0	3
Westchester	7,000	17	29.14	6	35.3	117.69	0	0
Mount Vernon	11,000	13	14.20	8	61.5	77.00	0	1
Port Chester	5,583	6	12.90	2	33.3	333.33	0	0
Sing Sing	6,500	14	25.85	1	7.1	......	0	0
New Rochelle	6,000	7	14 00	......	......	14.28	0	0
Peekskill	7,000	23	29.93	8	25.1	175.00	0	0
Rest of district	....	249	......	46	18.4	76.00	0	1
HUDSON VALLEY DISTRICT:								
Totals	....	1,152	......	248	19 5	103.60	10	44
ALBANY	100,000	246	29.52	54	22.0	134.14	3	15
COHOES	22,432	42	22.41	15	36 0	238.40	0	8
TROY	60,605	184	36.43	35	19.0	67.70	4	3
West Troy	13,000	41	37.85	9	42.0	25.00	0	1
Green Island	6,000	14	28.00	1	7.1	141.50	0	2
Lansingburgh	10,000	34	37.80	7	20.6	59.20	0	1
Hoosick Falls	6,000	9	18.00	1	11,1	......	0	0
Greenbush	8,000	17	25.50	3	17.6	58.90	0	0
Coxsackie	4,000	8	24 00	......	......	......	0	0
Catskill	4,930	12	29.16	2	16.7	333.33	0	2
HUDSON	10,027	14	16.80	3	21.4	213.50	0	1
KINGSTON	21,181	22	12.54	5	22.7	181.80	1	0
Marbletown	4.000	8	24.00	2	25.0	125 00	0	0
Esopus	4,736	7	18.00	1	14.3	142.86	0	0
Saugerties	4,000	3	9.00	....	......	333.33	0	0
POUGHKEEPSIE	22,836	33	17.36	6	18.1	151.51	0	1
Fishkill	10,732	14	......	5	25.0	......	0	0
Wappinger Falls	5,000	5	12.00	......	....		0	0
NEWBURGH	23.263	31	16.00	8	25.8	32.25	0	0
Port Jervis	9,500	13	16.42	2	15 4	230.00	0	1
Middletown	11 918	19	29.15	1	5.3	52.50	0	0
Goshen	4,500	12	......	2	16.7	250.00	1	0
Haverstraw	7,000	12	20.57	5	41.6	......	0	0
Nyack	5,000	9	21.60	7	77.7	444.44	0	0
Ramapo	5,000	2	......	2	......	......	0	0
Rest of district	....	341	......	55	16.2	85.30	1	9

YORK STATE BOARD OF HEALTH.

districts, cities and towns, during March, 1891.

type. For boundaries of *Sanitary Districts*, see Annual Summary.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
20	....	171	117	26	76	316	80	1.441	837	72	326	412	415	622	144	173	159	*871
13	0	100	67	19	43	194	62	842	521	41	194	253	257	313	102	124	51	617
6	0	63	36	7	25	100	14	440	212	24	86	123	110	221	28	37	44	193
0	0	0	0	0	0	0	0	3	0	1	0	0	1	2	0	1	0	0
0	0	0	0	0	0	0	0	2	1	0	0	0	0	2	0	0	2	3
0	0	0	0	0	0	2	0	5	2	0	0	2	2	3	1	0	0	0
0	0	1	5	0	0	3	0	19	6	1	2	3	2	6	0	3	2	3
0	0	0	2	0	2	2	0	7	3	0	2	0	3	6	0	0	4	7
0	0	0	0	0	0	0	0	0	2	1	1	1	1	4	0	0	8	0
0	0	0	1	0	0	0	0	9	2	0	6	1	0	2	0	0	4	5
0	0	0	0	0	0	0	0	8	2	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	6	3	1	2	1	2	2	1	0	1	4
1	0	0	0	0	0	3	0	7	4	1	1	3	1	3	0	0	3	3
0	0	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	2	8
0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0
0	0	0	0	0	0	0	0	5	2	0	1	1	0	3	2	3	0	2
0	0	0	0	0	0	1	0	10	1	0	1	2	3	5	1	0	2	3
0	0	0	0	0	1	0	0	5	1	0	0	0	3	0	0	0	2	1
0	0	0	0	0	0	0	0	1	0	0	1	0	1	2	0	0	1	2
0	0	0	0	0	0	6	0	14	9	0	2	9	5	4	0	0	2	0
0	0	0	0	0	0	2	0	7	0	0	1	0	1	4	0	1	0	1
0	0	0	0	0	0	0	0	4	0	0	0	0	1	4	1	0	0	1
0	0	2	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	1
0	0	0	0	0	0	0	0	4	6	0	1	1	2	0	0	0	0	0
0	0	0	0	0	0	1	0	1	1	0	1	1	1	1	0	0	0	0
0	0	0	3	0	1	0	0	3	4	0	1	0	4	3	1	0	2	1
0	0	5	3	0	4	2	4	41	54	2	19	10	14	32	6	4	28	20
10	....	3	7	6	12	24	5	277	115	8	80	53	91	140	32	33	110	92
1	0	1	0	0	4	8	1	51	38	1	11	10	24	30	9	5	8	26
0	0	0	0	0	0	1	1	7	2	1	2	3	0	8	1	0	3	5
0	0	0	0	1	0	3	1	66	10	0	16	7	21	21	2	1	20	8
0	0	0	0	0	0	0	0	19	2	1	3	3	1	5	1	1	1	3
0	0	0	0	0	0	0	0	3	2	0	2	0	2	0	0	0	2	1
0	0	0	0	0	0	1	0	11	1	1	2	1	1	5	2	0	6	2
0	0	0	0	0	0	0	0	3	2	0	0	0	0	3	0	0	1	0
0	0	1	0	0	0	0	0	4	3	0	1	0	1	1	0	2	3	1
0	0	0	0	0	0	0	0	3	1	0	1	0	0	0	0	1	2	0
2	0	0	0	0	0	0	0	0	2	0	0	0	0	4	1	0	0	1
1	0	0	0	1	0	0	0	2	1	0	2	0	2	0	1	1	0	2
2	0	0	0	0	0	0	1	5	1	0	4	2	3	0	0	1	2	0
0	0	0	0	0	0	1	0	1	1	0	1	0	2	0	1	0	1	0
0	0	0	1	0	0	0	0	0	1	0	0	0	1	2	0	2	0	0
1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	4	0	0	1	3	1	4	1	3	4	2	2	6	1
0	0	0	0	0	0	0	0	2	2	0	0	0	0	1	0	0	3	6
0	0	0	0	0	0	0	0	1	2	0	0	0	2	0	0	0	0	0
0	0	0	0	0	1	0	0	5	3	0	4	0	4	4	2	2	4	2
1	0	0	0	1	0	0	0	2	1	0	1	0	1	0	0	0	1	4
0	0	0	0	0	0	1	0	2	1	0	2	4	3	5	0	0	0	1
0	0	0	0	0	0	2	0	2	2	0	0	1	1	0	0	0	3	0
0	0	0	0	0	0	0	0	4	3	0	1	1	0	0	1	0	0	2
0	0	0	4	0	0	0	0	1	1	0	0	0	0	3	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
2	0	1	2	3	3	7	1	80	30	3	23	20	19	44	9	15	44	25

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
ADIRONDACK & NORTH'N DIST.:								
Totals	....	385	......	76	19.6	60.00	3	5
WATERTOWN	14,733	32	26.28	11	....	......	0	0
Ellisburgh	4,811	11	27.50	1	9.0	......	0	0
Cape Vincent	3,143	7	26.20	2	28.5	......	0	0
Clayton	4,314	13	......	4	30.7	76.80	0	0
OGDENSBURGH	12,000	18	18.00	6	33.3	166.67	1	1
Potsdam	4,000	5	15.00	....	....	......	0	0
Malone	9,000	18	24.00	2	11.1	......	0	0
Plattsburgh	7,000	12	20.50	4	33.3	83.33	0	0
Glens Falls	10,000	14	16.80	4	28.5	71.42	0	1
Whitehall	4,000	8	24.00	1	12.5	375.00	0	1
Fort Edward	5,000	3	......	1	33.3	333.33	0	0
Fort Ann	4,267	6	16.75	....	....	......	0	0
Argyle	3,700	3	10.00	....	....	......	0	0
Salem	3,500	5	17.14	....	....	......	0	0
Greenwich	4,000	3	9.00	....	....	......	0	0
Rest of district	....	227	......	40	17.9	52.16	2	2
MOHAWK VALLEY DISTRICT:								
Totals	....	508	......	82	16.2	74.51	1	16
SCHENECTADY	20,000	50	30.00	13	26.0	260.00	0	8
Schoharie	3,350	4	14.30	....	....	......	0	0
Cobleskill	3,371	7	24.70	....	....	......	0	0
AMSTERDAM	17,264	28	16.60	7	25.0	142.85	1	0
Fort Plain	3,500	7	24.00	1	14.3	......	0	0
Johnstown	6,000	7	14.00	....	....	......	0	0
GLOVERSVILLE	13,845	24	20.88	4	16.7	......	0	0
Little Falls	8,500	7	10.00	....	....	......	0	0
Herkimer	3,000	5	20.00	1	20.0	......	0	0
Ilion	4,200	4	11.43	....	....	......	0	0
UTICA	44,000	80	21.81	12	15.0	75.00	0	0
Whitestown	5,000	8	19.20	....	....	125.00	0	1
ROME	15,000	13	......	3	23.1	77.00	0	0
Boonville	4,000	3	9.00	1	33.3	......	0	0
Camden	3,400	4	14.12	....	....	......	0	0
Waterford	5,400	10	22.22	3	30.0	100.00	0	1
Ballston Spa	3,200	4	15.00	2	50.0	......	0	0
Saratoga Springs	10,000	21	25.20	6	19.4	......	0	0
Rest of district	....	222	......	30	14.0	66.60	0	6
SOUTHERN TIER DISTRICT:								
Totals	....	414	......	54	13.1	72.46	2	5
BINGHAMTON	35,000	58	19.88	12	20.4	138.00	1	0
Owego	6,000	8	16.00	1	12.5	......	0	0
Candor	4,323	4	12.00	....	....	......	0	0
Waverly	5,000	6	16.40	1	16.7	166.67	0	1
ELMIRA	28,000	46	19.71	10	21.8	21.80	0	0
HORNELLSVILLE	10,000	13	15.60	1	7.7	......	0	0
Bath	3,500	2	......	....	....	......	0	0
CORNING	8,553	18	25.25	2	11.1	111.11	0	0
Olean	8,000	2	......	....	....	......	0	0
Salamanca	6,000	6	12.00	3	50.0	333.33	0	0
JAMESTOWN	15,838	25	18.78	4	16.0	40.00	0	1
Westfield	3,000	4	16.00	....	....	......	0	0
Fredonia	3,000	1	4.00	....	....	......	0	0
Rest of district	....	221	......	20	8.5	72.85	1	3
EAST CENTRAL DISTRICT:								
Totals	....	424	......	58	13.6	68.40	3	8
SYRACUSE	88,000	104	14.15	20	19.6	88.90	1	3
Baldwinsville	3,000	4	16.00	....	....	......	0	0
Cortland	9,000	13	17.33	....	....	......	0	0

FOR MARCH — (*Continued*).

Malarial diseases	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer	Accidents and violence.	Old age.	Unclassified.
1	....	1	....	1	2	8	2	66	47	3	29	17	34	31	14	14	61	46
0	0	0	0	0	0	0	1	5	6	0	2	0	3	3	2	0	6	4
0	0	0	0	0	0	0	0	5	2	0	0	0	1	0	0	0	3	0
0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	1	2	1
0	0	0	0	0	0	1	0	0	3	0	0	1	0	1	0	0	1	6
0	0	0	0	0	0	0	1	2	2	1	0	0	0	2	1	0	2	5
0	0	0	0	0	0	0	0	3	0	0	1	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	3	3	0	0	2	4	2	0	1	2	1
1	0	0	0	0	0	0	0	1	2	0	0	0	1	3	1	1	2	0
0	0	0	0	0	0	0	0	3	3	0	1	0	1	2	1	0	0	2
0	0	0	0	0	0	2	0	1	0	0	0	0	0	2	0	1	1	0
0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	1	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
0	0	1	0	0	2	5	0	42	24	1	22	14	20	14	7	9	38	24
3	....	3	1	1	5	8	3	87	60	6	29	34	42	78	7	13	81	30
3	0	0	0	0	0	1	1	9	8	0	5	2	4	6	0	0	2	1
0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	0
0	0	0	0	0	0	0	0	1	0	0	0	3	1	0	1	0	1	0
0	0	1	0	0	1	1	0	5	3	1	2	2	1	5	1	0	4	0
0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	1	0	3	0
0	0	0	0	0	0	0	0	3	0	0	0	1	1	0	0	1	0	1
0	0	0	0	0	0	0	0	6	2	0	1	3	3	5	0	2	0	2
0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	0	0	1	0
0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	1	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	1	0
0	0	0	0	0	0	4	2	10	13	1	2	7	4	24	0	2	6	5
0	0	0	0	0	0	0	0	1	3	0	0	0	0	2	0	0	1	0
0	0	0	0	0	0	1	0	2	1	0	2	0	0	5	1	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	2	1	0	0	2	0	0	0	1	1	2
0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	1
0	0	0	0	0	0	0	0	4	3	0	1	1	4	0	0	0	4	4
0	0	2	1	1	4	1	0	41	20	3	13	13	20	23	3	4	54	13
2	....	2	8	....	1	7	3	79	36	4	31	13	48	55	12	12	61	33
2	0	0	2	0	0	1	2	7	10	0	9	1	4	11	2	0	6	0
0	0	0	0	0	0	0	0	3	1	0	0	0	1	0	0	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0
0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	1	0
0	0	0	0	0	0	1	0	9	4	1	6	2	3	7	1	1	5	6
0	0	0	0	0	0	0	0	3	3	0	0	2	1	3	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
0	0	1	0	0	0	1	0	3	2	2	0	2	2	2	1	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	3
0	0	0	0	0	0	0	0	6	1	0	2	1	2	5	0	1	6	0
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	1	6	0	1	2	1	47	13	1	13	4	31	24	8	6	38	21
1	....	4	3	3	2	4	1	58	53	4	31	23	32	55	20	15	70	34
1	0	0	0	1	0	2	1	9	18	0	12	4	7	16	4	5	10	10
0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	1	3	1	1	1	0	2	0	1	3	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever	Typhoid fever.
EAST CENTRAL DIST.—(*Cont'd*):								
Oneida	6,018	6	12.00	1	16.7	166.66	0	0
Hamilton	4,000	10	30.00	1	10.0	......	0	0
Cazenovia	4,363	3	......	....	....	333.33	1	0
Brookfield	3,685	4	13.10	....	....	......	0	0
Norwich	5,500	10	21.80	....	....	......	0	0
Oneonta	7,000	8	13.71	1	12.5	125.00	0	1
Worchester	3,000	3	12.00	1	33.3	333.33	0	0
Cooperstown	3,000	3	12.00	....	....	......	0	0
Walton	3,540	11	......	3	27.3	272.73	0	0
Delhi	3,000	5	20.00	1	20.0	......	0	0
Rest of district	....	240	......	30	12.0	51.06	1	4
WEST CENTRAL DISTRICT:								
Totals	....	370	......	31	8.3	43.25	3	2
AUBURN	26,000	42	19.38	6	14.3	23.85	1	0
ITHACA	10,000	8	......	....	....	......	0	0
Waterloo	4,500	11	29.33	2	19.2	......	0	0
Seneca Falls	6,000	9	18.00	....	....	......	0	0
Geneva	6,000	12	24.00	1	....	......	0	0
Canandaigua	6,300	7	13.33	....	....	......	0	0
Manchester	4 000	3	9.00	....	....	......	0	0
Phelps	7,000	6	10.30	....	....	......	0	0
Penn Yan	4,500	9	18.67	....	....	......	0	0
Batavia	7,000	9	15.43	2	....	......	1	0
Dansville	3,700	4	13.00	....	....	......	0	0
Le Roy	5,000	4	9.60	2	....	......	0	0
Rest of district	....	246	......	20	8.2	52.40	1	2
LAKE ONTARIO & WEST. DIST.:								
Totals	....	1,082	......	316	29.3	102.80	10	13
BUFFALO	255,000	488	22.96	197	40.2	149.00	5	5
Tonawanda	7,000	12	20.57	5	44.6	333.33	0	1
Amherst	4,578	4	......	....	....	......	0	0
LOCKPORT	15,000	12	......	1	8.3	83.33	0	0
Niagara	7,000	20	30.85	7	35.0	55.55	0	1
Medina	4,000	1	......	1	....	......	0	0
Albion	5,000	9	21.60	2	22.2	111.11	1	0
Brockport	4,500	6	16.00	1	16.7	......	0	0
ROCHESTER	128,327	180	14.00	39	22.2	66.66	2	2
Palmyra	4,800	7	17.50	....	....	......	0	0
Lyons	6,000	12	24.00	2	16.7	......	0	0
Clyde	3,000	2	......	1	....	......	0	0
OSWEGO	21,826	38	20.90	12	31.5	78.75	0	2
Fulton	4,000	1	......	....	....	......	0	0
Richland	4,000	4	12.00	....	50.0	250.00	0	0
Rest of district	....	236	......	46	16.0	52.40	2	2
Totals for the State	....	10,672	......	3,118	28.2	115.30	61	121
Average for March for past six years	....	8,352	......	2,761	32.3	153.88	47	70

REMARKS — During March there was an average daily mortality of 341; during the two months January 398; for the three months in 1890 331 and in 1891, [illegible]. The extraordinary death rate was reported in the February Bulletin, and its height is reached in March. Comparing this from ordinary zymotic diseases was greater, 11.6 to 8.8, the [illegible] rate at this season the rate for the first two months of the year being 13.8; from consumption, [illegible] in March, 142 months under comparison were alike. The only measure of mortality from the influenza is the from influenza alone. It is seen that although the mortality is much increased, being not less epidemic, it still falls short by at least fifty per cent of the increase caused by it in January. during the month. Whooping cough and measles prevail in numerous localities, and they show tion of mortality for all zymotic diseases is considerably diminished because of the increase large. Smallpox has disappeared from Jamestown and Nunda, and there is now none in the

FOR MARCH — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	1	0	1	0	0	1	0	0	1	0	1	1	0
0	0	0	0	0	0	0	0	1	1	0	1	2	0	0	0	1	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0
0	0	0	0	0	0	0	0	1	0	0	1	2	0	1	2	1	2	0
0	0	0	0	0	0	0	0	2	1	0	2	0	0	1	0	0	0	1
0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0
0	0	0	3	0	0	0	0	2	0	0	1	0	0	1	1	0	3	0
0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	0
0	0	3	0	2	2	1	0	40	27	3	10	12	24	30	13	4	44	20
....	....	3	1	....	2	4	1	54	53	3	21	11	35	43	13	8	82	31
0	0	0	0	0	0	0	0	7	10	1	0	1	8	1	1	1	5	6
0	0	0	0	0	0	0	0	1	0	0	1	0	0	3	0	0	2	1
0	0	0	0	0	0	0	0	3	2	0	0	0	2	1	0	0	2	1
0	0	0	0	0	0	0	0	0	5	0	1	0	1	0	1	0	1	0
0	0	0	0	0	0	0	0	0	5	0	1	1	0	1	0	0	3	1
0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	2	0	0	1
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0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	1	2
0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	3	1
0	0	0	1	0	0	0	0	0	2	1	0	0	0	2	0	0	2	0
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0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	2	0
0	0	3	0	0	2	4	1	38	22	1	17	9	22	33	8	7	59	17
5	....	8	20	3	4	42	6	245	117	12	66	48	74	141	41	22	72	133
5	0	5	14	2	2	30	5	108	50	8	22	18	23	60	13	10	0	93
0	0	0	2	0	0	0	1	2	1	0	0	0	0	0	0	1	2	2
0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	1
0	0	1	0	0	0	0	0	3	1	0	0	0	2	0	2	0	0	3
0	0	0	0	0	0	0	0	9	0	0	1	0	2	2	2	0	0	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	2	1	0	0	1	1	3	0	0	0	0
0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0	0	1
0	0	0	0	0	1	7	0	41	23	3	12	13	15	32	3	6	12	8
0	0	0	0	0	0	0	0	0	1	0	1	0	2	1	0	0	2	0
0	0	0	0	0	0	0	0	2	3	0	0	0	3	0	0	1	2	1
0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	8	3	0	2	1	7	6	1	1	0	6
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	0	0	0
0	0	2	4	1	1	3	0	69	30	1	16	13	18	34	19	3	54	14
[illegible]	..	95	157	40	104	4[illegible]3	101	2,307	1,318	112	613	611	771	1,165	283	290	696	1270
57	11	177	168	47	93	[illegible]20	188	1,763	1,081	112	418	424	567	9[illegible]2	203	256	689	896

preceding, 310. In 1890 there was a daily mortality in March of 299, in February, 306, and in
of January, 1890, was due to epidemic influenza; the recurrence of this disease, in mild form,
month with January, 1890, there were fifty-four less deaths per day; the percentage of deaths
being commonly about 14.5; from acute respiratory diseases 21.7 in March, 31.1 in January,
in January; from diseases of digestive system, 5.7 to 4.4; of the nervous system, the
increase in that from local diseases, especially these noted, since comparatively few are reported
than 1,000 greater for the month than it would have been but for the occurance of this
1890. The typhoid fever endemic of Albany and neighboring localities has considerably lessened
a moderate rise in their death rate. Scarlet fever does not continue to increase. The propor-
from the cause noted in all local diseases and in deaths from old age, which latter is especially
State.

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths fr m all causes.	Cerebro-spinal fever	Typhoid fever.
EAST CENTRAL DIST.—(*Cont'd*):								
Oneida	6,018	6	12.00	1	16.7	166.66	0	0
Hamilton	4,000	10	30.00	1	10.0	......	0	0
Cazenovia	4,363	3	......	....	....	333.33	1	0
Brookfield	3,685	4	13.10	....	....	......	0	0
Norwich	5,500	10	21.80	....	....	......	0	0
Oneonta	7,000	8	13.71	1	12.5	125.00	0	1
Worchester	3,000	3	12.00	1	33.3	333.33	0	0
Cooperstown	3,000	3	12.00	....	....	......	0	0
Walton	3,540	11	......	3	27.3	272.73	0	0
Delhi	3,000	5	20.00	1	20.0	......	0	0
Rest of district	....	240	......	30	12.0	51.00	1	4
WEST CENTRAL DISTRICT: Totals	....	370	......	31	8.3	43.25	3	2
AUBURN	26,000	42	19.38	6	14.3	23.85	1	0
ITHACA	10,000	8	......	....	....	......	0	0
Waterloo	4,500	11	29.33	2	19.2	......	0	0
Seneca Falls	6,000	9	18.00	....	....	......	0	0
Geneva	6,000	12	24.00	1	....	......	0	0
Canandaigua	6,300	7	13.33	....	....	......	0	0
Manchester	4 000	3	9.00	....	....	......	0	0
Phelps	7,000	6	10.30	....	....	......	0	0
Penn Yan	4,500	9	18.67	....	....	......	0	0
Batavia	7,000	9	15.43	2	....	......	1	0
Dansville	3,700	4	13.00	....	....	......	0	0
Le Roy	5,000	4	9.60	2	....	......	0	0
Rest of district	....	246	......	20	8.2	52.40	1	2
LAKE ONTARIO & WEST. DIST.: Totals	....	1,082	......	316	29.3	102.80	10	13
BUFFALO	255,000	488	22.96	107	40.2	149.00	5	5
Tonawanda	7,000	12	20.57	5	44.6	333.33	0	1
Amherst	4,578	4	......	....	....	......	0	0
LOCKPORT	15,000	12	......	1	8.3	83.33	0	0
Niagara	7,000	20	30.85	7	35.0	55.55	0	1
Medina	4,000	1	......	1	....	......	0	0
Albion	5,000	9	21.60	2	22.2	111.11	1	0
Brockport	4,500	6	16.00	1	16.7	......	0	0
ROCHESTER	128,327	180	14.00	39	22.2	66.66	2	2
Palmyra	4,800	7	17.50	....	....	......	0	0
Lyons	6,000	12	24.00	2	16.7	......	0	0
Clyde	3,000	2	......	1	....	......	0	0
OSWEGO	21,826	38	20.90	12	31.5	78.75	0	2
Fulton	4,000	1	......	....	....	......	0	0
Richland	4,000	4	12.00	....	50.0	250.00	0	0
Rest of district	....	[illegible]	......	46	18.0	[illegible]	2	2
Totals for the State	....	10,672	......	1,118	22.2	115.20	63	121
Average for March for past six years	....	8,559	......	2,764	32.3	152.58	47	59

REMARKS.—During March there was an average daily mortality of 341; during the two months
January 398; for the three months in 1890 334, and in 1891, [illegible]. The extraordinary death rate
was reported in the February Bulletin, and its height is reached in March. Comparing this
from ordinary zymotic diseases was greater, 11.6 to 8.8, the [illegible] rate at this season
the rate for the first two months of the year being 13.8; from consumption, 1[illegible]3 in March, 14
months under comparison were alike. The only measure of mortality from the influenza is the
from influenza alone. It is seen that although the mortality is much increased, being not less
epidemic, it still falls short by at least fifty per cent of the increase caused by it in January,
during the month. Whooping cough and measles prevail in numerous localities, and they show
tion of mortality for all zymotic diseases is considerably diminished because of the increase
large. Smallpox has disappeared from Jamestown and Nunda, and there is now none in the

FOR MARCH — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	1	0	1	0	0	1	0	0	1	0	1	1	0
0	0	0	0	0	0	0	0	1	1	0	1	2	0	0	0	1	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0
0	0	0	0	0	0	0	0	1	0	0	1	2	0	1	2	1	2	0
0	0	0	0	0	0	0	0	2	1	0	2	0	0	1	0	0	0	1
0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0
0	0	0	3	0	0	0	0	2	0	0	1	0	0	1	1	0	3	0
0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	0
0	0	3	0	2	2	1	0	40	27	3	10	12	24	30	13	4	44	20
....	....	3	1	....	2	4	1	54	53	3	21	11	35	43	13	8	82	31
0	0	0	0	0	0	0	0	7	10	1	0	1	8	1	1	1	5	6
0	0	0	0	0	0	0	0	1	0	0	1	0	0	3	0	0	2	1
0	0	0	0	0	0	0	0	3	2	0	0	0	2	1	0	0	2	1
0	0	0	0	0	0	0	0	0	5	0	1	0	1	0	1	0	1	0
0	0	0	0	0	0	0	0	0	5	0	1	1	0	1	0	0	3	1
0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	2	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	1	2
0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	3	1
0	0	0	1	0	0	0	0	0	2	1	0	0	0	2	0	0	2	6
0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	2	0
0	0	3	0	0	2	4	1	38	22	1	17	9	22	33	8	7	59	17
5	....	8	20	3	4	42	6	245	117	12	66	48	74	141	41	22	72	133
5	0	5	14	2	2	30	5	108	50	8	32	18	23	60	13	10	0	93
0	0	0	2	0	0	0	1	2	1	0	0	0	0	0	0	1	2	2
0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	1
0	0	1	0	0	0	0	0	3	1	0	0	0	2	0	2	0	0	3
0	0	0	0	0	0	0	0	9	0	0	1	0	2	2	2	0	0	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	2	1	0	0	1	1	3	0	0	0	0
0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0	0	1
0	0	0	0	0	1	7	0	41	23	3	12	13	15	32	3	6	12	8
0	0	0	0	0	0	0	0	0	1	0	1	0	2	1	0	0	2	0
0	0	0	0	0	0	0	0	2	3	0	0	0	3	0	0	1	2	1
0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	8	3	0	2	1	7	6	1	1	0	6
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	0	0	0
0	0	7	4	1	1	3	0	69	30	1	16	13	18	34	19	3	54	14
49		195	157	40	104	433	101	2,307	1,318	112	613	611	771	1,165	283	290	696	1270
57	11	177	168	47	93	320	188	1,763	1,081	112	418	424	567	9[illegible]2	203	256	689	896

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MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPITALS, villages in *italics* and towns in Roman

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	....	8,714	......	2,863	32.8	110.00	39	32
NEW YORK CITY	1,680,796	5,048	36.55	1,790	39.5	124.00	27	13
BROOKLYN	862,155	2,494	35.18	838	32.5	105.60	10	11
Gravesend	6,912	19	32.87	6	31.5	157.50	0	0
New Utrecht	5,000	19	45.60	2	10.5	......	0	0
Flatbush	8,000	23	34.50	1	4.3	......	0	0
LONG ISLAND CITY	30,396	88	32.76	35	39.8	56.82	0	0
Newtown	10,000	56	67.20	24	42.8	35.70	0	0
Oyster Bay	12,000	34	34.00	6	17.6	147.00	0	0
Hempstead	18,160	71	46.80	13	18.5	42.80	0	0
North Hempstead	8,000	17	25.50	2	11.7	116.25	0	0
Jamaica	10,089	43	51.10	10	23.2	46.51	0	0
Flushing	16,000	45	33.75	11	24.4	66.66	0	0
Southold	7,500	12	19.20	3	25.0	......	0	0
Sag Harbor	3,000	2	8.00	....	....	......	0	0
Huntington	8,100	25	37.00	5	20.0	40.00	0	0
New Brighton	15,000	54	43.20	9	16.7	72.22	0	0
Edgewater	12,000	44	44.00	8	18.2	227.27	0	2
Port Richmond	3,600	8	26.72	4	50.0	250.00	0	0
Westfield	7,000	10	17.14	5	50.0	......	0	0
YONKERS	31,949	84	52.50	19	22.6	257.12	0	1
Westchester	7,000	26	44.57	....	....	34.00	1	0
Port Chester	5,583	8	18.20	2	25.0	375.00	0	1
Sing Sing	6,500	17	31.38	1	6.0	......	0	0
New Rochelle	6,000	20	40.00	8	40.0	50.00	0	0
Peekskill	7,000	33	58.00	4	12.2	61.11	0	0
Rest of district	....	414	......	57	13.8	65.45	1	4
HUDSON VALLEY DISTRICT:								
Totals	....	1,445	......	250	17.3	52.48	3	28
ALBANY	100,000	268	32.16	45	16.7	51.85	1	9
COHOES	22,432	57	30.49	16	28.1	141.00	0	5
TROY	60,605	183	34.25	29	15.8	273.25	1	1
West Troy	13,000	40	36.90	7	17.5	......	0	0
Green Island	6,000	17	32.00	2	11.9	59.10	0	1
Lansingburgh	10,000	22	26.40	2	9.1	45.50	0	1
Hoosick Falls	6,000	7	14.00	1	11.8	......	0	0
Greenbush	8,000	15	22.50	4	26.7	133.33	0	0
Coxsackie	4,000	8	24.00	4	50.0	......	0	0
Catskill	4,930	4	9.72	1	25.0	500.00	0	0
HUDSON	10,027	25	30.00	4	16.0	80.00	0	0
KINGSTON	21,181	43	24.50	7	16.2	46.51	0	0
Ellenville	3,000	8	32.00	....	....	......	0	0
Marbletown	4,000	6	18.00	2	33.3	......	0	0
Esopus	4,736	5	12.70	....	....	......	0	0
Saugerties	4,000	8	24.00	2	25.0	125.00	0	0
POUGHKEEPSIE	22,836	55	28.85	12	21.8	145.25	0	1
Fishkill	10,732	17	18.85	2	11.9	118.85	0	0
Wappinger Falls	5,000	6	14.00	4	66.7	166.67	0	0
NEWBURGH	23,263	46	24.23	12	26.2	87.00	0	0
Port Jervis	9,500	18	22.74	5	22.2	111.11	0	0
Middletown	11,918	24	24.15	5	20.8	41.68	0	0
Goshen	4,500	10	22.22	....	....	......	0	0
Haverstraw	7,000	21	36.00	8	38.0	47.52	0	0
Nyack	5,000	14	33.60	5	35.7	285.71	0	0
Ramapo	5,000	7	16.80	1	14.3	......	0	0
Rest of district	....	511	......	71	13.9	47.65	1	10

YORK STATE BOARD OF HEALTH.

districts, cities and towns, during April, 1891.

type. For boundaries of *Sanitary Districts*, see Annual Summary.]

Malarial diseases.	Small-pox.	Scarlet fever	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
28	1	231	114	26	80	298	105	2,924	824	51	298	447	458	737	133	232	252	1404
11	1	169	84	18	47	166	79	1,144	508	26	193	291	241	336	79	158	69	1088
13	0	51	23	7	25	108	16	1,078	199	23	76	105	132	269	28	49	52	219
0	0	1	0	0	0	1	1	8	2	0	0	1	0	3	0	2	0	0
0	0	0	0	0	0	0	0	6	0	0	1	1	1	1	0	3	4	2
0	0	0	0	0	0	0	0	9	3	1	0	1	2	2	1	0	4	0
0	0	1	1	1	0	1	1	43	7	0	1	2	6	11	0	1	4	8
0	0	0	1	0	0	1	0	26	2	0	0	1	1	7	0	1	5	11
0	0	3	2	0	0	0	0	11	2	0	0	1	1	3	1	0	8	2
0	0	0	1	0	1	1	0	32	2	0	4	3	4	6	2	0	12	3
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0	0	0	0	0	0	0	1	8	2	0	0	0	4	3	2	0	5	0
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0	0	0	0	0	0	0	0	2	1	0	1	0	0	1	0	0	1	4
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0	0	0	0	0	2	0	0	7	2	1	2	0	3	8	1	1	5	2
1	0	2	1	0	3	6	5	117	64	0	9	20	40	48	9	9	43	32
11	....	4	14	4	6	10	6	463	161	8	67	50	113	178	28	47	157	87
10	0	0	0	0	1	1	1	90	31	1	10	13	28	30	8	10	5	23
0	0	1	0	1	0	1	0	15	6	0	4	1	6	6	1	2	2	6
0	0	0	0	0	0	3	0	66	27	1	5	6	17	18	2	2	26	8
0	0	0	0	0	0	0	0	18	0	0	5	3	3	6	0	0	3	2
0	0	0	0	0	0	0	0	5	2	0	1	1	2	2	2	1	0	0
0	0	0	0	0	0	0	0	3	4	0	1	0	1	2	0	0	7	3
0	0	0	0	0	0	0	0	3	0	0	0	0	0	2	0	2	0	0
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2	0	0	0	0	0	0	0	8	1	2	2	1	0	6	0	0	2	1
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0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	1	0	1	0
0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	2	0
0	0	0	0	0	0	1	0	3	0	0	1	0	0	0	2	1	0	0
2	0	0	3	0	1	0	1	14	6	0	3	1	1	11	0	3	4	4
1	0	0	0	0	1	0	0	4	1	0	0	1	1	1	1	4	1	1
0	0	1	0	0	0	0	0	3	1	0	0	0	0	1	0	0	0	0
0	0	0	4	0	0	0	0	16	6	0	2	2	0	10	0	0	4	2
0	0	0	0	0	0	2	0	3	0	0	1	1	3	5	0	1	1	1
0	0	0	0	0	0	0	2	11	4	0	0	1	0	2	0	0	2	2
0	0	0	0	0	0	0	0	1	2	0	1	0	1	2	0	0	3	0
1	0	0	0	0	0	0	0	8	1	0	0	2	0	3	0	1	1	4
0	0	0	3	0	0	1	0	5	1	0	0	0	0	1	0	0	2	1
0	0	0	0	0	0	0	0	2	0	0	0	1	0	1	0	0	3	0
3	0	1	3	3	3	0	0	160	51	4	23	14	37	65	10	18	78	27

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
ADIRONDACK & NORTH'N DIST:								
Totals	....	377	......	58	15.2	63.25	2	4
WATERTOWN	14,733	12	12.00	3	25.0	83.33	1	0
Ellisburgh	4.811	9	22.50	....	....	......	0	0
Cape Vincent	3,143	3	11.55	....	....	......	0	0
Clayton	4,313	4	11.30	....	....	......	0	0
OGDENSBURGH	12,000	10	10.00	3	30.0	......	0	0
Potsdam	4,000	7	21.00	2	28.5	428.50	0	0
Malone	9,000	11	15.78	1	9.0	......	0	0
Plattsburgh	7,000	6	......	....	....	166 67	1	0
Glens Falls	10.000	17	20.40	2	11.7	117.50	0	0
Whitehall	4,000	7	21.00	2	28.7	142.85	0	0
Fort Edward	5,000	7	16.80	....	....	......	0	0
Fort Ann	4,267	4	11.40	2	50.0	......	0	0
Argyle	3,700	1	......	....	....	......	0	0
Greenwich	4,000	11	35.00	3	27.3	......	0	0
Rest of district	....	268	......	40	15.4	61.50	0	4
MOHAWK VALLEY DISTRICT:								
Totals	....	711	......	128	18.5	78.45	3	7
SCHENECTADY	20,000	78	46.80	18	23.0	102.56	0	4
Schoharie	3,350	8	28.23	1	12.5	......	0	0
Cobleskill	3,871	3	10.60	....	....	......	0	0
AMSTERDAM	17,264	40	37.44	9	22.5	150.00	0	1
Fort Plain	3,500	4	13.71	1	25.0	......	0	0
Johnstown	6,000	14	28.00	1	7.1	......	0	0
GLOVERSVILLE	13,845	26	22.62	8	30.7	......	0	0
Little Falls	8,500	13	18.35	2	15.3	......	0	0
Herkimer	3,000	5	20.00	1	20.0	......	0	0
Ilion	4,200	7	20.00	1	14.3	......	0	0
UTICA	44,000	115	21.36	20	17.4	70.00	0	0
Whitestown	5,000	9	21.60	3	33.3	......	0	0
ROME	15,000	28	22.40	5	17.9	250.00	1	0
Boonville	4.000	5	15.00	1	20.0	......	0	0
Camden	3,400	8	28.22	....	....	......	0	0
Waterford	5,400	12	26.66	3	25.0	......	0	0
Ballston Spa	3,200	10	37.50	1	10.0	......	0	0
Saratoga Springs	10,000	38	45.60	9	23.6	......	0	0
Rest of district	....	288	......	47	15.0	91.67	2	2
SOUTHERN TIER DISTRICT:								
Totals	....	493	......	64	13.0	62.48	2	9
BINGHAMTON	35,000	53	18.18	9	17.0	75.48	0	2
Owego	6.004	17	32.00	1	6.2	62.50	0	1
Candor	4,323	5	14.00	....	....	......	0	0
Waverly	5.000	10	24.00	....	....	100.00	0	1
ELMIRA	28,000	45	19.30	5	11.1	44.45	0	0
Horseheads	3,500	5	17.00	1	20.0	200.00	0	0
HORNELLSVILLE	10.000	14	16.80	3	21.4	214.28	1	0
Bath	3,500	4	13.75	....	....	......	0	0
CORNING	8.553	16	22.45	4	25.0	62.50	0	0
Olean	8.000	18	27.00	4	22.2	......	0	0
Salamanca	6.000	3	......	1	....	......	0	0
JAMESTOWN	15,838	20	13.02	2	10.0	......	0	0
Westfield	3,000	3	12.00	1	33.3	......	0	0
Fredonia	3,000	7	28.00	....	....	......	0	0
Rest of district	....	273	......	33	12.2	63.20	1	5
EAST CENTRAL DISTRICT:								
Totals	....	446	......	52	11.6	70.07	4	7
SYRACUSE	88,000	129	17.60	23	17.8	61.50	1	1
Baldwinsville	3,000	5	20.00	1	20.0	......	0	0
Cortland	9,000	13	17.33	2	15.3	76.92	0	0

FOR APRIL — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysi elas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer	Accidents and viol nce.	Old age.	Unclassified.
....	....	5	3	2	1	7	......	73	45	5	20	17	34	38	11	17	58	35
0	0	0	0	0	0	0	0	2	2	0	1	1	0	3	0	1	1	0
0	0	0	0	0	0	0	0	6	2	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2	0
0	0	0	0	0	0	0	0	1	2	0	0	0	1	2	1	1	1	1
0	0	2	0	1	0	0	0	0	1	0	1	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	1	1	0	2	0	1	2	0	2	0	2
0	0	0	0	0	0	0	0	1	2	0	0	0	1	1	0	0	0	0
0	0	0	0	0	0	1	0	2	4	0	0	2	2	1	1	0	2	1
0	0	0	1	0	0	1	0	0	1	0	0	1	1	1	1	0	1	0
0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	3	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	3	2	0	0	0	1	1	0	0	3	1
0	0	3	2.	1	1	5	0	53	26	5	16	13	26	25	7	10	43	28
3	....	9	3	2	6	17	1	175	83	6	39	31	62	84	21	22	89	48
2	0	0	0	0	1	1	0	21	14	0	1	4	6	7	2	0	8	7
0	0	0	0	0	0	0	0	2	2	0	0	0	1	2	0	0	1	0
0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0
0	0	1	0	1	2	1	0	12	5	1	2	0	3	5	0	3	1	2
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	1
0	0	0	0	0	0	0	0	3	4	0	2	2	0	0	1	0	0	2
0	0	0	0	0	0	0	0	4	4	1	1	1	5	5	0	1	2	2
0	0	0	0	0	0	0	0	3	1	0	2	0	0	1	0	3	2	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	1
0	0	0	0	0	0	0	0	2	0	0	1	1	0	1	0	0	2	0
0	0	1	1	0	0	6	0	30	24	0	9	5	9	18	2	0	7	3
0	0	0	0	0	0	0	0	1	0	0	2	0	2	2	0	1	1	0
0	0	0	0	0	1	5	0	3	1	1	2	3	0	2	2	1	2	4
0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	1
0	0	0	0	0	0	0	0	4	1	0	0	0	0	1	0	0	2	0
0	0	0	0	0	0	0	0	4	1	0	0	4	0	1	0	2	0	0
0	0	0	0	0	0	0	0	0	1	0	2	1	1	1	0	0	4	0
0	0	0	0	0	0	0	0	20	3	0	2	1	4	1	0	0	5	2
1	0	7	2	1	2	4	1	65	22	2	12	8	28	35	13	10	49	22
1	....	4	6	3	2	4	......	121	35	4	32	16	45	61	16	18	85	29
1	0	0	0	0	0	1	0	9	4	2	7	0	5	10	4	0	6	2
0	0	0	0	0	0	0	0	4	2	0	2	1	3	0	1	0	3	0
0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	1	1	0
0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	2	0	3	4
0	0	0	0	1	0	1	0	14	6	0	2	0	3	4	2	0	8	0
0	0	0	0	1	0	0	0	1	0	0	0	0	1	2	0	0	0	0
0	0	1	0	0	1	0	0	2	0	0	0	0	2	5	1	1	0	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	3
0	0	0	1	0	0	0	0	5	2	0	1	0	2	1	0	1	0	1
0	0	0	0	0	0	0	0	4	1	0	1	1	0	1	0	4	5	2
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	5	3	1	5	1	1	2	0	1	1	0
0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	2	0	0	1	1	1	0	1	0	1	0
0	0	3	5	1	1	2	0	70	13	1	13	11	26	35	5	9	56	16
1	....	4	5	1	2	3	4	88	46	3	23	18	30	52	12	18	86	30
0	0	1	1	0	0	2	2	26	19	2	6	8	15	9	2	7	18	9
0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	1	1
0	0	0	0	0	1	0	0	4	1	0	0	1	1	1	0	1	3	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DIST.—(*Cont'd*):								
Homer	3,000	5	20.00	....	....	......	0	0
Oneida	6,018	3	......	....	....	......	0	0
Hamilton	4,000	8	24.00	....	....	......	0	0
Cazenovia	4,363	5	14.00	....	....	200.00	0	1
Brookfield	3,685	5	16.22	....	....	......	0	0
Norwich	5,500	5	10.90	1	20.0	......	0	0
Oneonta	7,000	9	15.43	....	....	222.22	2	0
Worcester	3,000	2	8.00	1	50.0	......	0	0
Cooperstown	3,000	2	8.00	1	50.0	......	0	0
Walton	3,540	9	30.84	1	11.1	222.22	0	0
Delhi	3,000	2	8.00	....	....	......	0	0
Rest of district	....	244	......	22	8.9	69.50	1	5
WEST CENTRAL DISTRICT:								
Totals	....	437	......	33	7.5	46.00	2	4
AUBURN	26,000	46	21.23	4	8.7	65.20	0	1
ITHACA	10,000	18	21.60	....	....	......	0	0
Waterloo	4,500	7	18.67	2	28.7	......	0	0
Seneca Falls	6,000	16	32.00	2	12.5	......	0	0
Geneva	6,000	18	36.00	3	15.6	111.11	0	1
Canandaigua	6,300	14	26.67	....	....	......	0	0
Manchester	4,000	8	24.00	1	12.5	......	0	0
Phelps	7,000	6	......	2	33.3	......	0	0
Penn Yan	4,500	9	24.00	1	11.1	111.11	0	0
Batavia	7,000	15	27.70	1	6.6	66.67	0	0
Dansville	3,700	8	25.94	1	12.5	......	0	0
Rest of district	....	272	......	16	6.0	48.15	2	2
LAKE ONTARIO & WEST. DIST:								
Totals	....	1,358	......	358	26.3	69.40	12	12
BUFFALO	255,000	735	34.54	230	31.3	61.22	12	5
Tonawanda	7,000	15	25.70	6	42.0	200.00	0	0
Amherst	4,578	9	23.40	....	....	111.11	0	0
LOCKPORT	15,000	5	......	....	....	......	0	0
Niagara	7,000	15	25.70	5	33.3	133.33	0	0
Medina	4,000	9	27.00	1	11.1	......	0	0
Albion	5,000	8	19.20	....	....	......	0	0
Brockport	4,500	7	18.67	1	14.3	......	0	0
ROCHESTER	138,327	206	17.82	53	26.0	99.05	0	3
Palmyra	4,800	6	15.00	2	33.3	......	0	0
Newark	3,500	6	20.57	....	....	......	0	0
Lyons	6,000	10	20.00	2	20.0	......	0	0
Clyde	3,000	3	12.00	....	....	......	0	0
OSWEGO	21,826	26	14.30	5	19.2	......	0	0
Richland	4,000	2	......	....	....	......	0	0
Rest of district	....	296	......	53	17.1	67.70	0	4
Totals for the State	....	13,981	......	3,809	27.3	92.85	67	103
Average for April for past six years	....	8,043	......	2,567	32.0	143.20	53	64

REMARKS.— The mortality for April is 13,981, or 463 deaths daily, the largest that has ever been
recorded), by sixty-five deaths daily; that of April, 1890, by 166, and that of March, 1891, which
daily. The deaths from ordinary zymotic diseases have not varied much in either of these
form in February, caused an estimated mortality of 1,000 in March, and in April has apparently
This is greater by nearly 1,000 than the estimated mortality from this cause in January, 1890,
less than one month from its commencement. Outside of the large cities only about 500 deaths
tory diseases, which caused one-fourth of the mortality, consumption (to a much less degree
diseases in smaller ratio. The mortality among the aged has been very great, and from diathetic
for the month is 30.00 per 1,000; from zymotic diseases, 2.70 per 1,000; of deaths under five years
scarlet fever has increased; measles and whooping cough are the same as last month. The

FOR APRIL — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	6	0
0	0	0	0	0	0	0	0	2	1	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	2	0
0	0	0	0	0	0	0	0	1	2	0	0	1	0	0	0	0	0	1
0	0	0	0	0	0	0	0	2	1	0	1	1	0	0	1	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
0	0	0	2	0	0	0	0	4	2	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
1	0	3	2	1	1	1	2	44	20	1	14	6	20	37	7	10	50	18
2	....	6	3	....	1	2	....	66	51	4	28	17	43	56	17	14	90	31
0	0	0	0	0	0	2	0	9	9	0	2	1	2	5	1	2	6	6
0	0	0	0	0	0	0	0	4	1	0	0	1	0	3	1	0	7	1
0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	1	2
0	0	0	0	0	0	0	0	1	2	0	2	2	2	0	1	0	2	4
0	0	1	0	0	0	0	0	3	3	0	2	0	1	1	1	2	2	1
0	0	0	0	0	0	0	0	2	0	0	3	1	2	4	0	0	2	0
0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	1	0	1	2
0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	1	0	0	1
1	0	0	0	0	0	0	0	2	1	0	0	0	1	3	0	0	1	0
0	0	0	1	0	0	0	0	5	2	0	2	0	1	1	0	2	1	0
0	0	0	0	0	0	0	0	2	2	0	0	0	1	1	0	0	2	0
1	0	5	2	0	1	0	0	38	27	4	16	11	30	35	11	8	65	14
2	....	10	11	4	8	29	6	447	132	11	89	49	75	142	33	50	84	152
0	0	2	2	2	2	19	1	311	63	4	52	23	25	73	13	21	0	105
0	0	0	2	0	0	1	0	6	0	0	0	0	2	0	0	1	2	1
0	0	0	1	0	0	0	0	2	0	0	1	0	0	0	0	0	4	1
0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	1
0	0	0	1	0	0	0	1	3	1	0	1	1	1	1	1	1	1	2
0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	2	3	1
0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	1	0	1	0
0	0	0	0	0	0	0	0	2	3	0	0	0	1	0	0	0	0	1
1	0	2	0	1	4	6	3	40	24	4	14	7	14	37	7	8	18	13
0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	3	0
0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	0	0	2	0
0	0	0	0	0	0	0	0	2	1	0	0	0	0	1	0	0	5	1
0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	4	5	0	1	0	3	5	0	2	0	6
0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
1	0	5	5	1	2	3	1	71	30	8	16	16	26	23	11	14	45	19
48	1	273	159	42	106	370	122	4,357	1,377	92	596	645	869	1,348	271	418	901	1816
64	11	179	124	44	60	441	106	1,457	1,105	96	428	430	559	905	182	279	616	832

recorded for one month in this State; it exceeds that of January, 1890 (the highest previously was greater by thirty-four deaths daily than the preceding months of the year, by 118 deaths months The increase is due to the epidemic of influenza or la grippe, which, beginning in mild been the cause of 4,500 to 5,000 deaths, excess above April, 1890, all allowances being made. The onset of the epidemic has been much less rapid than in 1890, when it reached its height in have been attributed to this cause. The increase has shown itself in deaths from acute respiration in 1890), diseases of the nervous system (causing one-tenth of all deaths) and other local diseases not classified. Returns being received from 5,600,000 population, the annual death rate of age, 8.21, which is much greater than in January, 1890. Diphtheria has materially diminished; typhoid fever epidemic of Albany, Cohoes and Schenectady has largely abated.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPITALS, villages in *italics* and towns in Roman

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	....	6,072	......	2,199	36.7	126.30	30	32
NEW YORK CITY	1,680,796	3,692	25.86	1,390	37.6	149.57	20	20
BROOKLYN	862,155	1,651	22.05	604	36.6	142.42	7	9
Gravesend	6,912	7	12.17	....	....	......	0	0
New Utrecht	5,000	15	......	4	26.7	133.33	1	0
Flatbush	8,000	12	18.00	2	16.7	83.33	0	0
LONG ISLAND CITY	30,396	63	24.86	30	47.6	158.73	0	0
Newtown	17,549	35	23.93	14	40.0	57.10	0	0
Oyster Bay	12,000	21	21.00	4	19.0	238.10	0	0
Hempstead	18,160	20	......	9	45.0	150.00	0	0
North Hempstead	8,000	14	21.00	1	7.1	214.28	0	0
Jamaica	10,080	24	28.50	9	37.5	166.67	0	0
Flushing	16,000	32	24.00	9	28.1	93.74	0	1
Southold	7,500	14	22.40	5	35.7	......	0	0
Sag Harbor	3,000	6	24.00	3	50.0	......	0	0
Huntington	8,100	5	......	1	20.0	......	0	0
New Brighton	15,000	29	23.20	3	10.3	31.00	0	0
Edgewater	12,000	33	33.33	9	27.3	242.42	0	0
Port Richmond	3,600	4	13.33	....	....	250.00	0	0
Westfield	7,000	10	17.14	1	10.0	100.00	0	0
YONKERS	31,949	52	*19.50	17	....	......	0	0
Westchester	7,000	13	22.28	3	23.1	77.00	1	0
Mount Vernon	11,000	15	16.55	6	40.0	200.00	0	1
Port Chester	5,583	5	10.71	3	60.0	400.00	0	0
Sing Sing	6,500	13	24.00	7	53.8	153.88	1	0
New Rochelle	6,000	9	18.00	3	33.3	333.33	0	0
Peekskill	7,000	14	24.00	1	7.1	......	0	0
Rest of district	....	264	......	61	21.6	87.20	0	1
HUDSON VALLEY DISTRICT:								
Totals	....	972	......	215	22.1	102.84	6	17
ALBANY	100,000	179	21.48	31	17.2	94.45	1	7
COHOES	22,432	37	19.60	12	32.4	81.15	0	3
TROY	60,605	120	23.60	42	....	......	2	1
West Troy	13,000	17	16.00	3	17.6	58.66	0	1
Green Island	6,000	9	18.00	3	33.3	......	0	0
Lansingburgh	10,000	17	20.40	2	11.6	58.00	0	1
Hoosick Falls	6,000	17	34.00	4	23.5	235.30	1	0
Greenbush	8,000	14	21.00	4	28.5	500.00	1	0
Coxsackie	4,000	5	15.00	....	....	......	0	0
Catskill	4,930	3	7.30	1	33.3	......	0	0
HUDSON	10,027	18	21.60	1	5.5	......	0	0
KINGSTON	21,181	36	20.52	7	19.4	83.33	0	0
Ellenville	3,000	1	4.00	....	....	......	0	0
Marbletown	4,000	5	15.00	1	20.0	......	0	0
Esopus	4,736	4	10.20	1	25.0	......	0	0
Saugerties	4,000	6	18.00	1	16.7	......	0	0
POUGHKEEPSIE	22,836	65	34.20	20	30.7	246.12	0	0
Fishkill	10,732	3	......	1	....	......	0	0
Wappinger Falls	5,000	7	16.80	....	....	142.85	0	0
NEWBURGH	23,263	53	27.35	14	26.4	138.08	0	0
Port Jervis	9,500	29	36.06	15	55.2	310.34	0	1
Middletown	11,918	20	20.15	5	25.0	50.00	0	0
Goshen	4,500	9	24.00	1	11.1	......	0	0
Haverstraw	7,000	16	27.43	6	37.5	......	0	0
Nyack	5,000	9	21.60	4	44.4	333.33	0	0
Ramapo	5,000	7	16.80	2	28.5	......	0	0
Rest of district	....	266	......	33	12.4	75.20	1	3

YORK STATE BOARD OF HEALTH.

districts, cities and towns, during May, 1891.

type. For boundaries of *Sanitary Districts*, see Annual Summary.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
16	....	230	136	24	54	251	95	1,332	760	75	301	380	391	529	128	249	132	927
11	0	155	82	15	40	130	79	742	478	44	191	248	232	256	81	168	43	657
2	0	57	40	5	8	97	10	452	201	25	76	93	117	181	34	36	35	166
0	0	0	0	0	0	0	0	3	1	0	0	2	0	1	0	0	0	0
0	0	0	0	0	1	0	0	2	1	0	0	1	0	0	0	6	1	2
0	0	0	0	0	0	1	0	5	2	0	0	1	0	3	0	0	0	0
0	0	2	4	0	0	4	0	20	6	0	3	3	0	4	0	2	2	13
0	0	0	0	0	0	1	1	4	6	0	1	3	2	5	2	0	1	9
0	0	5	0	0	0	0	0	3	1	0	0	2	2	2	0	2	2	2
0	0	2	0	0	1	0	0	6	1	0	1	2	1	1	0	1	1	3
1	0	2	0	0	0	0	0	2	1	0	2	1	1	3	0	0	1	0
0	0	1	0	2	0	0	1	2	1	0	0	2	0	1	1	3	3	7
0	0	0	1	0	0	1	0	6	3	0	2	3	4	2	0	1	3	5
0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	4	7
0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	2	1
0	0	0	0	0	0	0	0	2	1	0	1	0	0	0	0	0	0	1
0	0	0	0	0	0	1	0	2	3	0	1	3	2	10	2	1	2	2
0	0	3	0	0	1	4	0	6	3	0	1	1	3	4	0	2	1	4
1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0
1	0	0	0	0	0	0	0	3	1	0	0	0	1	1	0	0	3	0
0	0	0	1	0	0	3	1	10	6	3	1	2	2	8	3	3	1	8
0	0	0	0	0	0	0	0	2	1	0	1	0	0	1	0	0	3	4
0	0	0	1	0	0	0	1	0	2	0	2	1	2	1	0	0	0	4
0	0	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
0	0	0	0	0	0	0	1	3	2	0	1	0	0	2	0	2	0	1
0	0	0	0	0	0	3	0	1	2	0	0	0	1	1	0	0	0	1
0	0	0	0	0	0	0	0	4	2	0	2	1	0	1	0	1	2	1
0	0	1	7	2	3	6	1	47	35	3	13	10	20	41	3	21	21	29
7	....	2	28	1	16	12	11	216	116	9	57	44	83	104	15	39	93	96
0	0	0	0	0	2	1	6	54	20	3	4	12	20	18	0	3	7	21
0	0	0	0	0	0	0	1	7	8	0	7	0	0	4	1	1	1	4
0	0	1	0	0	1	1	0	30	14	0	5	3	9	16	1	6	4	26
0	0	0	0	0	0	0	0	5	3	0	2	1	2	3	0	0	0	0
0	0	0	0	0	0	0	0	1	1	1	0	0	2	1	0	2	0	1
0	0	0	0	0	0	0	0	4	0	1	0	0	1	2	0	0	6	2
0	0	1	0	1	0	1	0	4	3	0	2	0	0	1	0	0	0	3
1	0	0	2	0	1	2	0	4	0	0	0	0	1	0	0	1	0	1
0	0	0	0	0	0	0	0	0	1	0	2	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	6	1	0	4	4	0	2	0	0	0	1
2	0	0	0	0	0	1	0	7	6	0	4	3	6	2	1	2	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	1
0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	1	3	0	0	0	0	1	0	0	1	0
1	0	0	8	0	6	0	1	11	9	1	2	0	3	10	0	2	8	3
0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0
1	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0
0	0	0	6	0	0	1	0	13	4	0	2	4	2	6	3	4	3	5
0	0	0	4	0	4	0	0	3	1	1	4	2	1	0	0	1	2	5
0	0	0	0	0	1	0	0	4	2	0	2	0	3	2	0	4	2	0
0	0	0	0	0	0	0	0	2	0	0	1	1	1	1	0	0	1	2
0	0	0	0	0	0	0	0	3	3	0	1	1	1	2	0	1	0	4
0	0	0	1	0	0	2	0	1	0	0	0	0	0	4	1	0	0	0
0	0	0	0	0	0	0	0	1	1	0	1	0	0	2	0	0	1	1
2	0	0	7	0	1	3	3	49	30	2	11	13	29	25	7	12	52	16

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DIST.—(*Cont'd*):								
Skaneateles	4,866	1	......	....	....	......	0	0
Cortland	9,000	10	13.33	2	20.0	......	0	0
Homer	3,000	5	20.00	....	....	......	0	0
Oneida	6,018	2	......	....	....	......	0	0
Hamilton	4,000	3	9.00	1	33.3	......	0	0
Cazenovia	4,363	2	......	....	....	......	0	0
Brookfield	3,685	3	10.00	....	....	......	0	0
Norwich	5,500	7	15.10	2	28.5	......	0	0
Oneonta	7,000	15	25.71	2	13,3	200.00	0	1
Cooperstown	3,000	4	16.00	1	25.0	......	0	0
Walton	3,540	7	23.90	5	71.4	142.85	0	0
Delhi	3,000	8	32.00	1	12.5	......	0	0
Rest of district	....	258	......	27	10.4	42.30	0	2
WEST CENTRAL DISTRICT:								
Totals	....	399	......	33	8.3	37.30	2	1
Auburn	26,000	61	28.31	8	13,1	65.50	1	0
Ithaca	10,000	17	20.40	1	5.9	58.56	0	0
Waterloo	4,500	2	......	0	....	......	0	0
Seneca Falls	6,000	11	22,00	0	....	......	0	0
Geneva	6,000	13	26,00	1	7.7	......	0	0
Canandaigua	6,300	7	13.33	2	28.5	......	0	0
Manchester	4,600	2	6.00	0	....	......	0	0
Phelps	7,000	8	13.71	1	12.5	......	0	0
Penn Yan	4,500	7	18.67	3	42.8	......	0	0
Batavia	7,000	8	13.71	1	12.5	......	0	0
Dansville	3,700	6	19.46	1	16.7	......	0	0
Le Roy	5,000	8	19.20	0	....	125.00	0	0
Rest of district	....	249	......	15	6.0	32.12	1	1
LAKE ONTARIO & WEST. DIST.:								
Totals	....	1,098	......	245	22.3	89.10	10	17
Buffalo	255,000	487	22.89	142	29.2	86.50	8	3
Tonawanda	7,000	9	15.42	1	11.1	......	0	0
Amherst	4,578	4	11.00	......	......	......	0	0
Lockport	15,000	8	......	4	50.0	250.00	0	1
Niagara	7,000	19	32.57	4	20.0	157.85	0	1
Medina	4,000	4	12.00	1	25 0	250.00	0	0
Albion	5,000	5	12.00	......	......	......	0	0
Brockport	4,500	3	8.00	......	......	......	0	0
Rochester	138,327	201	17.39	41	20.0	110.00	0	5
Palmyra	4,800	8	20.00	2	25.0	......	0	0
Newark	3,500	6	20.57	1	16.7	333.33	0	0
Lyons	6,000	10	20.00	1	10.0	......	0	0
Clyde	3,000	5	20.00	1	20.0	......	0	0
Oswego	21,826	30	16.50	4	13.3	133.33	0	0
Richland	4,000	5	15.00	......	......	200.00	0	0
Rest of district	....	294	......	43	14.2	70.00	2	7
Totals for the State	....	10,213	......	2,917	28.6	117.45	57	88
Average for May for past six years	....	8,141	......	2,598	32.0	140.42	56	59

NOTE.—Death rate for April

REMARKS.—The mortality in the State for May is 10,213, or 330 deaths daily, according to the
than that of the preceding months of the year by about twenty deaths daily; and is greater than
but it has much abated; deaths from acute respiratory diseases have diminished by 2,224 from
from nervous diseases; 300 fewer from old age; 100 fewer from diseases both of the circulatory
past six years for May, the percentage of deaths from acute respiratory diseases alone is greater,
the proportion of deaths is less than the average, rather than greater. The actual mortality
only disease of this class which shows any increase over last month; but scarlet fever has a
tion reporting) is 21.50 per 1,000; from zymotic diseases 2.52; of deaths under 5 years of age,
has taken place uniformly, in the rural as well as the urban districts.

FOR MAY — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	2	0	1	1	1	0	1	1	8	0	0
0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	4	0	0	1	0	0	0	0	0	1	1
0	0	0	0	1	0	0	1	4	1	0	1	0	1	2	0	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1
0	0	0	1	0	0	0	0	2	0	0	1	0	0	0	0	0	1	2
0	0	0	0	0	0	0	0	2	2	1	1	0	0	0	0	0	0	2
1	0	2	3	0	0	1	2	40	29	1	19	19	28	25	5	10	50	21
1	....	4	2	....	....	1	4	60	33	5	31	22	46	44	19	19	68	37
0	0	0	0	0	0	1	2	10	11	0	7	3	7	4	0	3	5	7
0	0	0	0	0	0	0	1	7	1	0	1	2	1	1	1	0	2	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	3	2	0	1	2	1	0	0	1	1	0
0	0	0	0	0	0	0	0	3	1	0	0	0	3	1	0	1	4	0
0	0	0	0	0	0	0	0	3	0	0	0	0	1	1	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	2	1	1	0
0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	0	0	2	1
0	0	0	0	0	0	0	0	1	0	0	2	0	0	1	2	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	2
1	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	2	1
0	0	4	2	0	0	0	1	30	16	4	19	14	29	33	14	12	46	23
8	....	3	4	7	2	40	7	231	115	15	63	35	80	145	84	62	74	146
2	0	0	1	5	1	19	3	132	41	5	30	12	28	61	11	25	0	100
0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	3	1	1
0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	1	0	0
0	0	0	0	0	0	1	0	5	0	0	0	0	0	0	0	0	0	1
0	0	0	1	0	0	0	1	6	1	0	1	1	1	2	0	1	1	2
0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	2	1	0	0	2	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0
8	0	0	0	0	0	13	1	27	24	3	6	5	18	44	12	10	20	10
0	0	0	0	0	0	0	0	2	2	0	0	0	0	1	0	0	1	2
0	0	1	0	1	0	0	0	0	1	0	0	1	0	1	0	1	0	0
0	0	0	0	0	0	0	0	0	1	0	3	0	1	2	1	0	1	1
0	0	0	0	0	0	0	0	2	0	0	0	1	0	1	0	1	0	0
1	0	2	0	1	0	0	0	5	3	0	2	1	4	2	0	1	2	6
0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	1
2	0	0	2	0	0	6	2	46	38	6	19	12	23	30	10	19	46	22
35	....	252	184	79	37	339	127	2,129	1,234	114	561	555	741	1,021	248	434	629	134.
60	9	120	154	67	38	445	125	1,327	1,070	90	473	453	792	924	239	360	501	976

should have been given as 30.75.

reported returns; there were 133 fewer deaths each day than in April, but the mortality is greater that of May, 1890, by fifty deaths daily. There has been a continuance of influenza (la grippe), the preceding month, but there were 600 more than in last May; there were 300 fewer deaths and urinary systems; the unclassified deaths are also lower. Compared with the average of the being 20.8 to 16.3: from nervous, circulatory and other local diseases, and also from consumption, from diseases of the zymotic class was 1,200; in April, 1,300; in May, 1890, 1,100. Measles is the considerably greater mortality than a year ago. The death rate for the State (5,600,000 popula- 6.25. In April the death rate was 30.00 per 1,000 population. The lowering of the death-rate

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPITALS, villages in *italics* and towns in Roman

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	....	6,057	......	2,804	46.3	234.00	21	32
NEW YORK CITY	1,680,796	3,652	26.42	1,718	47.1	236.00	7	23
BROOKLYN	862 155	1,771	24.99	898	50.7	255.37	11	6
Gravesend	6,912	11	19.13	4	36.4	181.82	0	0
New Utrecht	5,000	9	21.60	2	22.2	222.22	0	0
Flatbush	8,000	22	33.00	8	36.4	45.45	0	0
LONG ISLAND CITY	30,396	80	31.58	31	38.9	275.00	2	0
Newtown	17.549	28	19.20	13	46.4	142.85	0	0
Oyster Bay	12,000	21	21.00	7	33.3	95.23	0	0
Hempstead	18,160	21	14.00	6	28.6	143.00	0	0
North Hempstead	8,000	8	12.00	2	25.0	......	0	0
Jamaica	10,089	31	37.00	13	41.8	193.88	0	0
Flushing	16,000	32	24.00	7	21.8	125.00	1	0
Southold	7,500	8	12.80	....	....	125.00	0	0
Sag Harbor	3,000	1	......	....	....	......	0	0
Huntington	8,100	11	16.50	3	27.3	181.82	0	0
New Brighton	15,000	26	20.80	4	15.4	38.60	0	1
Edgewater	12,000	29	29.00	5	17.2	103.40	0	0
Port Richmond	3,600	9	30.00	6	66.6	......	0	0
Westfield	7,000	8	13.71	3	37.5	......	0	0
YONKERS	31,949	46	17.25	25	54.3	391.30	0	0
Westchester	7,000	1	......	....	....	......	0	0
Mount Vernon	11,000	9	......	1	11.1	222.22	0	1
Port Chester	5,583	10	21 48	3	30.0	100.00	0	0
Sing Sing	6,500	11	20.30	4	36.4	181.82	0	1
New Rochelle	6,000	9	18.00	3	33.3	111.11	0	0
Peekskill	7,000	......	......	....	....	......	0	0
Rest of district	....	193	......	38	18.2	75.00	0	0
HUDSON VALLEY DISTRICT:								
Totals	....	854	......	221	25.9	127.63	6	11
ALBANY	100,000	174	20.88	48	27.5	161.00	1	2
COHOES	22,432	33	17.85	13	34.4	151.51	0	2
TROY	60,605	92	18.24	33	35.8	184.77	0	2
West Troy	13,000	14	......	4	28.5	......	0	0
Green Island	6,000	7	......	2	....	......	0	0
Lansingburgh	10 000	9	......	4	44.4	......	0	0
Hoosick Falls	6,000	9	18 00	....	....	111.11	0	0
Greenbush	8,000	9	13.50	7	77.7	333.33	1	0
Coxsackie	4,000	1	......	....	....	......	0	0
Catskill	4,930	6	14.70	....	....	......	0	0
HUDSON	10,027	17	20.40	9	52.8	293.50	0	0
KINGSTON	21,181	24	13.68	10	41.6	208 33	2	1
Ellenville	3,000	1	4.00	1	....	......	0	0
Marbletown	4.000	5	15.00	....	....	200.00	0	0
Esopus	4,736	4	10.00	....	....	......	0	0
Saugerties	4,000	4	12.00	....	....	......	0	0
POUGHKEEPSIE	22,836	34	17.86	13	38.2	117.65	0	0
Fishkill	10,732	22	24.50	3	13.6	21.91	1	0
Wappinger Falls	5,000	6	14.40	1	16.7	166.67	0	0
NEWBURGH	23,263	45	23.22	17	37.8	66.67	0	0
Port Jervis	9,500	17	21.47	10	58.7	117.42	0	0
Middletown	11,918	17	17.14	4	23.5	176.47	0	0
Goshen	4,500	4	10.10	....	....		0	0
Haverstraw	7,000	14	24 00	7	50.0	142.85	0	0
Nyack	5,000	8	19 20	1	12.5	125.00	0	0
Ramapo	5.000	5	12.00	1	20.0	200.00	1	0
Rest of district	....	273	......	33	12.1	76.85	0	4

YORK STATE BOARD OF HEALTH.

districts, cities and towns, during June, 1891.

type. For boundaries of *Sanitary Districts*, see Annual Summary.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
30	....	179	108	29	45	232	730	778	579	62	451	315	332	637	126	322	105	944
19	0	121	79	19	25	133	436	472	344	43	273	209	188	303	60	225	42	631
10	0	49	22	9	15	86	244	246	160	12	136	72	84	240	44	52	29	244
0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	4	0	3
0	0	0	0	0	0	0	2	1	1	0	0	0	0	2	0	0	1	2
0	0	0	0	0	0	0	1	6	4	0	3	1	3	2	0	1	0	1
0	0	8	4	0	0	1	7	12	7	1	9	5	4	8	1	1	2	8
1	0	0	1	0	0	0	2	1	2	0	1	0	2	6	2	1	1	8
0	0	1	0	0	0	0	1	0	0	0	4	1	2	5	1	1	1	4
0	0	0	1	0	1	0	1	1	3	0	2	2	1	4	1	1	2	1
0	0	0	0	0	0	0	0	1	2	0	0	0	0	2	0	1	1	1
0	0	0	0	0	0	3	3	4	5	0	2	0	1	2	3	3	1	4
0	0	0	0	0	0	0	3	4	4	0	1	3	4	1	2	3	1	5
0	0	0	0	0	0	0	1	0	0	0	1	1	0	2	1	0	1	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	1	0	1	0	0	1	2	2	0	1	1	0	1
0	0	0	0	0	0	0	0	2	4	1	2	3	4	2	2	0	2	3
0	0	0	0	0	0	1	2	2	4	0	0	0	7	5	0	2	3	3
0	0	0	0	0	0	0	0	2	1	0	1	0	0	2	0	0	0	3
0	0	0	0	0	0	0	0	2	2	0	0	0	0	2	0	2	0	0
0	0	0	0	0	0	3	15	2	3	1	1	1	4	8	1	1	3	3
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0	0	0	0	0	0	0	1	1	0	0	0	0	3	1	0	1	1	0
0	0	0	0	1	0	0	0	1	1	1	0	0	0	2	1	2	0	1
0	0	0	1	0	0	0	0	0	2	0	1	1	2	0	0	0	1	2
0	0	0	0	0	0	1	0	1	1	1	1	1	0	1	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	3	3	9	15	29	2	11	13	21	35	6	20	13	13
7	....	5	13	4	10	19	34	93	100	11	79	53	90	123	20	53	46	77
0	0	1	2	1	1	5	15	17	30	1	12	11	12	25	4	7	5	22
0	0	0	0	0	0	1	3	4	2	0	8	1	3	3	0	2	0	4
1	0	1	1	0	2	4	6	13	10	1	13	7	7	10	1	2	3	8
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0	0	0	0	0	0	0	0	2	1	0	1	0	1	0	0	1	0	1
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0	0	1	0	0	0	0	0	0	1	0	1	3	1	2	0	0	0	0
0	0	0	2	0	0	0	0	3	1	0	0	0	0	0	0	0	0	2
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0	0	0	0	0	0	0	5	2	2	0	0	0	0	6	0	2	0	0
0	0	0	0	0	0	1	1	1	2	2	6	1	3	3	0	0	1	0
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0	0	0	0	0	0	0	0	1	2	0	0	0	0	1	0	0	0	0
2	0	0	0	0	1	0	1	7	7	0	0	0	3	7	1	2	1	2
0	0	0	1	0	0	2	0	2	6	0	2	1	1	3	2	0	1	0
1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0
0	0	0	1	0	0	1	1	10	3	0	5	4	2	6	0	3	4	5
0	0	0	2	0	0	0	0	1	4	0	2	0	4	3	0	0	1	0
0	0	0	2	0	0	0	1	3	0	0	1	0	2	2	1	1	2	2
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0
0	0	0	1	1	0	0	0	2	0	0	1	0	1	6	0	1	0	1
1	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0	1	3
0	0	0	0	0	0	0	0	1	2	0	1	0	0	0	0	0	0	0
2	0	2	1	1	5	5	1	21	23	6	22	23	40	36	11	25	22	22

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
ADIRONDACK & NORTH'N DIST.:								
Totals	....	254	......	49	19.3	102.36	....	1
WATERTOWN	14,732	15	10.20	7	46.5	66.40	0	0
Ellisburgh	4,811	2	....	1	50.0	......	0	0
Cape Vincent	3,143	3	12.00	....	...	......	0	0
Clayton	4,314	3	......	1	50.0	......	0	9
OGDENSBURGH	12,000	17	17.00	4	23.5	176.46	0	0
Potsdam	4,000	3	9.00	....	....	......	0	0
Malone	9,000	11	14.67	2	18.2	90.91	0	0
Plattsburgh	7,000	8	13.70	1	12.5	.....	0	0
Crown Point	4,287	1	......	...	....	......	0	0
Glens Falls	10,000	10	12.00	3	30.0	100.00	0	0
Whitehall	4,000	7	21.00	3	42.8	285.71	0	0
Fort Edward	5,000	3	7.20	....	....	......	0	0
Fort Ann	4,267	6	16.80	....	....	......	0	0
Argyle	3,700	1	......	....	....	......	0	0
Salem	3,509	1	......	....	....	......	0	0
Greenwich	4,000	5	15.00	....	....	......	0	0
Rest of district	....	158	......	27	18.0	106.25	0	1
MOHAWK VALLEY DISTRICT:								
Totals	....	346	......	71	20.6	101.48	3	6
SCHENECTADY	20,000	30	18.00	13	43.3	133.33	0	2
Schoharie	3,350	3	12.00	1	33.3	......	0	0
Cobleskill	3,371	3	12.00	1	33.3	.....	0	0
AMSTERDAM	17,264	18	......	5	27.7	222.22	0	1
Fort Plain	3,500	6	20.57	1	16.7	166.67	0	0
Johnstown	6,000	7	14.00	2	28.5	285.71	2	0
GLOVERSVILLE	13,845	11	9.57	3	27.3	90.91	0	0
Little Falls	8,500	10	14.12	....	....	100.00	0	1
Herkimer	3,000	2	8.00	....	....	......	0	0
Ilion	4,200	4	11.43	....	....	250.00	0	0
UTICA	44,000	62	16.9	16	25.8	64.51	0	0
Whitestown	5,000	6	14.40	2	33.3	......	0	0
ROME	15,000	18	14.40	1	5.5	111.11	1	0
Boonville	4,000	3	9.00	....	....	333.33	0	0
Camden	3,400	4	14.12	1	25.0	250.00	0	0
Waterford	5,400	4	9.00	....	....	......	0	0
Saratoga Springs	10,000	9	10.80	2	22.2	......	0	0
Rest of district	....	144	......	23	15.3	90.24	0	2
SOUTHERN TIER DISTRICT:								
Totals	....	307	......	33	10.7	80.00	4	5
BINGHAMTON	35,000	52	17.71	4	7.7	57.70	0	2
Owego	6,000	8	16.00	....	....	......	0	0
Candor	4,323	2	......	....	....	500.00	0	1
Waverly	5,000	8	19.20	1	12.5	......	0	0
ELMIRA	28,000	38	16.30	8	21.1	184.21	3	1
Horseheads	3,500	1	......	1	....	......	0	0
HORNELLSVILLE	10,000	11	13.20	1	9.1	181.82	0	0
Bath	3,500	......	......	....	....	......	0	0
CORNING	8,553	8	......	....	....	166.67	0	0
Olean	8,000	11	16.50	....	....	90.91	0	0
Salamanca	6,000	2	......	....	....	......	0	0
JAMESTOWN	15,838	16	.....	2	12.5	62.50	1	0
Westfield	3,000	3	12.00	....	....	333.33	0	0
Fredonia	3,000	4	16.00	1	25.0	......	0	0
Rest of district	....	145	......	15	10.4	48.26	0	1
EAST CENTRAL DISTRICT:								
Totals	....	337	......	50	14.8	121.70	....	5
SYRACUSE	88,000	100	13.45	17	17.0	120.00	0	4
Baldwinsville	3,000	14	......	3	21.4	257.14	0	0

FOR JUNE — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
2	....	1	1	....	1	15	5	20	25	3	24	12	32	27	8	17	25	35
0	0	0	0	0	0	0	1	0	1	0	3	0	2	0	1	1	2	4
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
0	0	0	0	0	0	3	0	1	3	0	1	1	2	2	0	0	0	4
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	1	0	1	0	1	0	1	1	0	4	1	1
0	0	0	0	0	0	0	0	1	1	0	1	0	0	2	0	1	2	0
0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0	1	1	0	0	0	1	3	1	0	1	1
0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	2	1	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	1	0	0	0
2	0	1	0	0	1	9	3	16	16	2	13	11	21	17	4	7	14	20
2	....	5	1	....	3	5	10	29	42	1	29	17	32	63	15	20	33	30
0	0	0	0	0	0	0	2	3	3	0	6	0	0	6	0	1	2	5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
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0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0
1	0	0	0	0	0	2	1	9	12	0	1	2	7	18	2	4	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	1	1
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1	0	1	0	0	1	2	6	7	17	1	11	10	14	21	6	11	23	10
....	....	3	2	....	....	10	....	27	43	4	29	10	35	39	9	26	38	23
0	0	0	0	0	0	1	0	2	15	0	4	1	8	6	1	3	7	2
0	0	0	0	0	0	0	0	2	0	0	0	0	1	2	0	1	2	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	1	0	0	1	0	0	2	0	0	0	0	0	3	0	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0
0	0	1	1	0	0	4	0	12	15	2	19	5	19	19	3	11	21	12
3	....	3	4	4	3	12	4	30	41	5	21	22	40	40	10	19	33	25
1	0	0	0	2	0	3	2	12	17	0	7	10	11	14	2	5	4	6
0	0	0	0	0	0	5	0	0	2	0	0	1	1	0	0	0	1	4

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DIST.—(*Con.*):								
Cortland	9,000	6	......	1	16.7	166.67	0	1
Homer	3,000	4	16.00	2	50.0	......	0	0
Oneida	6,018	7	14.00	2	28.5	142.85	0	0
Hamilton	4,000	4	12.00	0	....	......	0	0
Cazenovia	4,363	4	10.50	0	....	......	0	0
Brookfield	3,685	4	12.50	0	....	......	0	0
Norwich	5,500	11	22.00	4	36.3	90.90	0	0
Oneonta	7,000	4	......	0	....	250.00	0	0
Worcester	3,000	2	8.00	0	....	......	0	0
Cooperstown	3,000	1	......	1	....	......	0	0
Walton	3,540	5	16.90	0	....	200.00	0	0
Delhi	3,000	1	4.00	0	....	......	0	0
Rest of district	....	170	......	20	12.0	111.70	0	3
WEST CENTRAL DISTRICT:								
Totals	....	234	......	24	10.3	47.00	....	....
AUBURN	26,000	49	22.61	7	14.3	81.63	0	0
ITHACA	10,000	9	10.80	1	11.1	......	0	0
Waterloo	4,500	2	......	0	....	......	0	0
Seneca Falls	6,000	5	10.00	0	....	......	0	0
Geneva	6,000	12	24.00	2	16.7	166.67	0	0
Canandaigua	6,300	2	......	0	....	......	0	0
Manchester	4,000	3	9.00	0	....	......	0	0
Phelps	7,000	1	......	0	....	......	0	0
Penn Yan	4,500	1	......	0	....	......	0	0
Batavia	7,000	1	......	0	....	......	0	0
Dansville	3,700	6	19.40	0	....	......	0	0
Le Roy	5,000	1	......	1	....	......	0	0
Rest of district	....	143	......	13	9.2	35.21	0	0
LAKE ONTARIO & WEST. DIST.:								
Totals	....	932	......	263	28.3	95.60	8	17
BUFFALO	255,000	443	20.61	166	37.4	90.30	7	7
Tonawanda	7,000	3	......	....	....	......	0	0
Amherst	4.5 8	3	......	1	33.3	......	0	0
LOCKPORT	15,000	5	......	....	....	......	0	0
Niagara	7,000	17	29.12	4	23.5	235.30	0	1
Medina	4,000	7	21.00	1	14.3	......	0	0
Albion	5,000	7	16.80	....	....	......	0	0
Brockport	4 500	4	10.68	....	....	......	0	1
ROCHESTER	138,327	185	16.00	54	29.4	108.10	0	3
Palmyra	4,800	2	......	....	....	......	0	0
Newark	2,500	1	......	....	....	......	0	0
Lyons	6,000	12	24.00	....	....	83.33	0	0
Clyde	3,000	4	16.00	....	....	......	0	0
OSWEGO	21,826	34	18.70	8	23.5	176.85	0	1
Richland	4,000	2	......	....	....	......	0	0
Rest of district	....	203	......	29	14.1	85 00	1	4
Totals for the State	....	9,321	......	3,615	38.8	186.80	42	80
Average for June for past six years	....	8,040	......	3,124	38.8	222.14	35	56

REMARKS — Monthly reports from 138 cities, villages and towns, aggregating a population of
22.78 per thousand per annum. The entire reported mortality for the State is 9,321, or 310 deaths
the mortality of a year ago is in acute respiratory diseases, and diseases of the digestive, circu-
influenza, and it is probable that 500 deaths were from this cause. The number of deaths from
from consumption (1,234 in May), or 10.5 per cent of the total mortality; this differs but little
to the total mortality being 186.80 per thousand now and 217.70 then. The reported deaths from
let fever is the only zymotic disease which shows any material increase, having caused 20
is considerable higher on account of the large increase in deaths from diarrhoeal diseases. The

FOR JUNE — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	1	1
0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	1
0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	4
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	1	0
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0	0	0
0	0	0	1	0	0	0	0	1	0	1	0	0	1	3	1	1	0	2
0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0
0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	1	0	0	0	0	0	0	1	0	1	2	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2	0	3	3	0	3	3	2	12	17	4	12	10	25	16	6	12	22	15
....	....	2	1	1	....	2	5	21	36	5	21	16	32	37	8	14	19	14
0	0	0	0	1	0	2	1	9	12	0	0	1	4	11	0	3	2	8
0	0	0	0	0	0	0	0	0	1	0	1	2	1	1	0	2	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
0	0	1	0	0	0	0	0	1	0	1	2	0	1	0	0	0	0	0
0	0	0	0	0	0	0	1	0	1	0	1	1	1	1	1	1	2	1
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	1	1	0	0	0	3	10	20	4	15	12	21	19	7	8	13	8
2	....	9	3	3	3	24	20	100	112	12	66	34	85	161	28	63	54	128
1	0	1	2	0	0	13	9	53	58	7	35	17	37	79	6	29	0	82
0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	2	0	0
0	0	0	1	1	0	0	1	0	4	0	1	0	1	1	1	2	1	2
0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	2	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	1	2
0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0
0	0	2	0	2	1	9	3	22	19	2	7	9	16	41	6	13	12	18
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1	0	0	0	0	0	0	0	0	3	0	0	0	0	3	2	0	2	1
0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	1	0
0	0	5	0	0	0	0	0	2	4	0	0	0	6	5	1	1	4	5
0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
0	0	1	0	0	2	2	7	19	19	2	21	6	20	30	9	13	20	17
46	....	207	133	41	65	319	808	1,098	978	103	720	479	678	1,127	224	534	353	1286
61	3	101	126	27	77	388	911	824	920	79	578	432	504	922	220	398	397	978

4,305,000, show a total mortality of 7,893 deaths during the month of June, making a death rate of
daily; in May there were 300 daily; in April 463; in June, 1890, there were 291. The excess over
latory and nervous systems; these have been found to represent the mortality from epidemic
acute respiratory diseases was 1,098, which is about half that of May. There were 978 deaths
from a year ago. Zymotic diseases have caused fewer deaths than in June, 1890, the proportion
diarrhœa are twenty per cent less than last June, and from diphtheria the rate is lower; scar-
death. The infant mortality is somewhat less, but compared with the preceding month of May
death rate for the State is 20.20 per thousand population per annum.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPITALS, villages in *italics* and towns in Roman

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	....	7,668	......	4,539	59.2	376.85	31	44
New York City	1,680,796	4,261	29.85	2,518	59.1	287.70	16	28
Brooklyn	862,155	2,317	31.57	1,460	63.0	409.58	10	10
Gravesend	6,912	31	......	18	57.6	430.00	0	0
New Utrecht	5,000	20	48.00	14	70.0	400.00	1	0
Flatbush	8,000	38	57.00	25	65.7	368.40	0	0
Long Island City	30,396	111	37.89	62	64.5	468.64	0	1
Newtown	17,549	55	38.28	42	75.0	398.85	0	0
Oyster Bay	12,000	16	16.00	13	81.2	625.00	0	0
Hempstead	18,160	58	36.35	24	41.0	250.00	0	0
North Hempstead	8,000	19	28.50	12	63.2	421.06	0	0
Jamaica	10,080	48	......	36	75.0	486.20	0	0
Flushing	16,000	54	40.50	34	63.0	350.83	0	0
Southold	7,500	14	22.40	3	21.4	357.14	0	1
Sag Harbor	3,000	4	16.00	2	50.0	750.00	0	0
Huntington	8,100	10	15.00	4	40.0	300.00	0	0
New Brighton	15,000	39	31.20	30	25.6	230.75	2	0
Edgewater	12,000	49	49.00	27	55.1	408.18	0	0
Port Richmond	3,600	10	33.33	6	60.0	300.00	0	0
Westfield	7,000	16	27.43	8	50.0	437.50	0	0
Yonkers	31,949	76	28.50	51	67.1	486.50	0	0
Westchester	7,000	22	37.70	9	41.0	409.00	0	1
Mount Vernon	11,000	25	27.27	15	60.0	400.00	0	0
Port Chester	5,583	13	27.95	8	61.5	384.61	0	0
Sing Sing	6,500	25	44.44	11	44.0	360.00	0	1
New Rochelle	6,000	25	......	20	80.0	480.00	0	0
Peekskill	7,000	13	22.28	5	38.4	384.61	0	0
Rest of district	....	298	......	102	31.0	250.00	2	2
HUDSON VALLEY DISTRICT:								
Totals	....	946	......	339	35.6	282.11	9	13
Albany	100,000	191	22.92	71	37.2	287.95	0	3
Cohoes	22,432	18	......	7	38.8	277.77	0	0
Troy	60,605	138	27.00	75	55.2	434.78	2	1
West Troy	13,000	29	26.77	13	44.8	517.24	1	0
Green Island	6,000	5	......	2	....	......	0	0
Lansingburgh	10,000	15	18.00	5	33.3	133.33	0	0
Hoosick Falls	6,000	9	18.00	4	44.4	......	0	0
Greenbush	8,000	18	28.00	3	16.7	222.22	0	2
Coxsackie	4,000	2	6.00	1	50 0	......	0	0
Catskill	4,930	6	14.58	1	16.7	166.67	0	0
Hudson	10,027	15	18.00	2	13.3	......	0	0
Kingston	21,181	30	17.10	15	50.0	466.67	2	1
Ellenville	3,000	1	4.00	1	100.0	......	0	0
Marbletown	4,000	6	18.00	1	16.7	......	0	0
Esopus	4,736	6	15.30	1	16.7	333.33	0	1
Saugerties	4,000	8	21.00	2	25.0	125.00	0	0
Poughkeepsie	22,836	30	15.78	10	33.3	200.00	0	1
Fishkill	10,732	7	......	4	57.1	511.43	0	0
Wappinger Falls	5,000	2	......	....	....	......	0	0
Newburgh	23,263	43	22.18	21	48.8	395.35	2	0
Port Jervis	9,500	14	17.70	4	28.5	142.85	0	0
Middletown	11,918	31	30.00	20	56.6	200.00	0	1
Goshen	4,500	9	24.00	2	22.2	111.11	0	0
Haverstraw	7,000	13	22.37	7	53.8	384.60	0	1

YORK STATE BOARD OF HEALTH.

districts, cities and towns, during July, 1891.

type. For boundaries of *Sanitary Districts*, see Annual Summary.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhoeal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhoeal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
33	....	153	81	12	33	220	2,284	526	668	39	698	344	341	642	111	257	99	1052
19	0	118	59	6	18	134	1,254	318	387	24	383	217	179	278	65	151	34	573
8	0	29	16	5	8	70	693	151	172	8	257	88	108	237	27	52	25	333
0	0	0	0	0	0	0	13	2	2	0	1	1	4	3	0	3	0	2
0	0	1	0	0	0	0	6	0	1	1	3	0	0	1	0	1	1	4
0	0	0	0	0	0	1	13	1	2	0	4	1	1	6	0	1	1	7
3	0	0	1	0	0	0	40	4	8	1	11	0	2	4	2	5	3	26
0	0	0	0	0	0	4	18	9	0	1	2	0	3	11	1	1	0	6
0	0	2	0	0	1	0	7	1	0	0	1	1	0	3	0	0	0	0
0	0	0	0	0	0	1	13	1	10	0	3	2	2	4	1	6	4	11
0	0	0	0	0	0	1	7	0	1	0	3	0	1	1	0	2	0	3
0	0	2	0	0	0	0	23	2	3	0	1	0	0	5	0	4	0	8
0	0	1	0	0	0	2	16	4	5	0	4	2	3	7	0	2	0	8
0	0	0	0	0	1	0	8	0	0	0	0	0	0	1	0	0	3	5
0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	3	0	1	0	1	1	0	1	0	1	1	1
0	0	0	0	0	0	0	7	3	5	0	1	1	6	6	1	3	3	1
1	0	0	0	0	0	0	19	2	6	0	4	2	2	3	0	1	1	8
0	0	0	0	0	0	0	3	0	1	0	1	1	1	0	0	0	0	3
0	0	0	0	0	0	0	7	1	2	0	2	1	0	2	0	0	0	1
1	0	0	0	0	0	1	35	7	6	1	1	5	4	12	0	0	3	0
0	0	0	0	0	0	0	8	1	2	0	1	1	0	3	0	0	2	3
0	0	0	0	0	0	0	10	1	1	1	0	2	2	3	1	1	0	3
0	0	0	0	1	0	0	4	0	0	1	1	0	0	2	1	2	0	1
0	0	0	2	0	1	1	4	2	0	0	3	1	2	1	1	2	2	2
0	0	0	0	0	0	1	11	0	0	1	2	0	1	2	0	1	0	6
0	0	0	0	0	1	0	4	1	3	0	1	1	0	0	0	0	0	2
1	0	0	3	0	3	3	61	15	40	0	7	16	20	46	11	18	16	34
7	....	8	2	3	9	14	203	60	94	9	77	31	74	115	25	45	65	83
1	0	1	0	0	1	3	46	13	19	2	16	7	17	27	6	11	6	12
1	0	0	0	0	0	1	4	3	0	1	1	0	0	2	0	2	1	2
0	0	0	0	1	1	2	53	15	8	2	10	1	6	14	3	5	4	10
1	0	0	0	0	0	0	13	1	2	0	2	2	2	1	0	1	0	3
0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	1
0	0	0	0	0	0	0	2	2	2	0	2	1	1	1	1	0	2	1
0	0	0	0	0	0	0	0	1	1	1	0	0	0	4	0	0	1	1
0	0	0	0	0	0	1	1	2	1	0	3	3	1	1	0	0	0	8
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
0	0	0	0	0	0	0	1	1	1	0	0	0	2	1	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	3	1	2	3	1	0	1	3
2	0	0	0	0	0	3	6	0	1	1	2	1	4	2	0	2	1	2
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	2	0
1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0
0	0	0	0	0	0	0	1	0	2	0	1	0	0	1	0	1	1	1
0	0	0	0	0	0	0	5	1	4	0	2	0	2	5	2	2	3	3
0	0	0	1	1	0	0	2	0	2	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
0	0	3	0	0	0	2	10	4	5	0	2	1	2	3	1	1	3	4
0	0	0	0	0	0	0	2	1	2	1	0	0	2	2	0	1	0	3
0	0	0	0	0	3	0	12	2	2	0	1	1	1	3	0	1	0	4
0	0	0	0	0	0	0	1	0	0	0	0	1	2	2	0	1	2	0
0	0	0	0	0	0	0	4	3	1	0	0	0	0	2	0	0	0	2

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VAL. DIST.—(*Cont'd*):								
Nyack	5,000	10	24.00	7	70.0	700.00	0	0
Ramapo	5,000	8	19.20	....	....	250.00	0	0
Rest of district	....	282	......	63	21.7	166.66	2	2
ADIRONDACK & NORTH'N DIST.:								
Totals	....	321	......	58	18.1	134.38	3	4
WATERTOWN	14,732	14	10.50	2	14.3	142.85	0	1
Ellisburgh	4,811	9	22 50	....	....	......	0	0
Cape Vincent	3.143	1	......	....	....	......	0	0
Clayton	4,314	4	10.50	....	....	......	0	0
OGDENSBURG	12,000	20	20.00	7	35.0	150.00	0	0
Potsdam	4,000	7	21.00	4	57.1	285.70	0	0
Malone	9 000	12	15.67	....	....	125.00	1	0
Plattsburgh	7,000	17	29.10	9	53.0	411.11	1	0
Crown Point	4,287	......	......	....	....	......	0	0
Glens Falls	10,000	......	......	....	....	......	0	0
Whitehall	4,000	1	......	....	....	......	0	0
Fort Edward	5 000	7	16.80	2	28.5	285.70	0	0
Fort Ann	4,267	4	11.00	....	....	......	0	0
Argyle	3,700	2	6.50	....	....	......	0	0
Salem	3,500	8	10.25	....	....	333.33	0	1
Greenwich	4,000	7	21.00	1	14.3	142.85	0	0
Rest of district	....	213	......	33	15.2	1:4.30	1	2
MOHAWK VALLEY DISTRICT:								
Totals	....	437	......	114	44.3	199.18	3	10
SCHENECTADY	20,000	44	26.40	18	40.9	295.48	0	4
Schoharie	3 350	3	10.35	....	....	......	0	0
Cobleskill	3,371	6	21.36	....	....	......	0	0
AMSTERDAM	17,264	28	19.46	6	21.4	357 14	1	0
Johnstown	6,000	5	......	2	40.0	400.00	0	0
GLOVERSVILLE	13,845	16	13.92	9	56 2	500.00	0	0
Little Falls	8,500	12	16.94	1	8.3	166.67	0	1
Herkimer	3,000	3	12.00	1	33.3	666.66	0	1
Ilion	4,200	1	......	1	....	......	0	0
UTICA	44,000	70	19.10	23	32.8	114.28	0	0
Whitestown	5,000	6	14.40	2	33.3	......	0	0
ROME	15.000	16	12.80	3	18.7	187 50	0	0
Boonville	4,000	3	9.00	....	....	......	0	0
Camden	3,400	3	10.60	....	....	......	0	0
Waterford	5.400	12	26.67	8	66.7	500.00	0	1
Ballston Spa	3,200	9	33.75	2	22.2	222.22	0	0
Saratoga Springs	10,000	25	30.00	4	16.0	120.00	0	0
Rest of district	....	175	......	34	20.0	150.25	2	3
SOUTHERN TIER DISTRICT:								
Totals	....	300	......	54	17.9	20.68	....	4
BINGHAMTON	35,000	39	13.35	6	15.7	131.35	0	2
Owego	6,000	11	22.00	2	18.2	......	0	0
Candor	4,323	3	......	2	66.6	333.33	0	0
Waverly	5,000	4	9.60	1	25.0	500.00	0	0
ELMIRA	28,000	48	20.56	15	31.2	250.00	0	0
Horseheads	3,500	5	17.12	1	20.0	200.00	0	0
HORNELLSVILLE	10,000	7	......	1	14.3	......	0	0
Bath	3,500	1	......	....	....	......	0	0
CORNING	8,553	15	21.05	11	73.3	600.00	0	0
Olean	8,000	9	13.50	1	11.1	......	0	0
Salamanca	6,000	3	6.00	1	33.3	333.33	0	0
JAMESTOWN	15,838	11	......	2	18.2	......	0	0

FOR JULY — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	1	0	6	0	2	0	0	0	0	0	0	0	0	1
0	0	2	0	0	0	0	0	0	2	0	1	0	0	0	0	1	0	2
1	0	2	1	1	3	2	32	11	35	1	28	11	29	35	10	16	36	24
....	....	1	1	2	....	14	18	9	44	3	29	22	36	38	14	15	37	31
0	0	0	0	0	0	0	1	0	2	0	2	0	1	3	0	0	2	2
0	0	0	0	0	0	0	0	0	2	1	1	0	1	2	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1
0	0	0	0	0	0	0	3	0	4	0	0	1	0	1	3	1	3	4
0	0	0	0	0	0	0	2	0	0	0	1	1	0	1	0	0	0	2
0	0	0	0	0	0	0	0	0	2	0	2	0	1	2	0	1	1	2
0	0	0	0	0	0	3	3	0	0	0	0	1	3	1	1	1	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	2	0	1	0	0	1	1	1	0	0	1	0
0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
0	0	0	0	0	0	0	1	0	2	0	0	0	1	2	0	0	1	0
0	0	1	1	2	0	11	6	9	29	2	22	17	27	23	8	12	27	13
....	....	4	3	....	2	25	38	29	39	2	35	25	43	65	19	18	45	32
0	0	0	2	0	1	1	5	2	3	0	2	0	2	10	1	2	4	5
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	2	1	0	1	0	0	0	0	1	1	0
0	0	2	0	0	1	0	6	3	1	0	4	1	1	3	1	1	1	2
0	0	1	1	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0
0	0	1	0	0	0	0	7	0	0	0	0	1	3	4	0	0	0	0
0	0	0	0	0	0	0	1	1	2	0	0	0	1	3	1	1	0	1
0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	2	6	4	11	0	4	6	9	16	5	1	3	3
0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	0	0	2
0	0	0	0	0	0	1	2	1	3	0	2	2	0	3	0	1	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	5	0	1	0	2	0	1	2	0	0	0	0
0	0	0	0	0	0	0	2	0	0	0	1	1	0	1	0	1	3	0
0	0	0	0	0	0	0	3	3	0	0	1	2	2	5	0	1	3	5
0	0	0	0	0	0	20	1	11	15	2	17	11	20	15	8	9	27	14
....	....	1	....	....	1	4	29	18	31	4	36	16	31	46	15	24	22	18
0	0	0	0	0	1	0	2	2	7	1	5	1	2	8	0	1	1	6
0	0	0	0	0	0	0	0	1	2	0	3	0	1	2	1	0	1	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0
0	0	0	0	0	0	0	2	0	0	0	0	1	0	1	0	0	0	0
0	0	1	0	0	0	1	10	3	3	1	3	2	2	6	3	10	1	2
0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	1	0	0
0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	1	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	9	1	1	0	2	0	0	0	0	0	0	2
0	0	0	0	0	0	0	0	0	1	0	3	0	1	2	0	1	1	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
SOUTHERN TIER DIST. (*Cont'd*):								
Westfield	3,000	......	......	....	....	......	0	0
Fredonia	3,000	1	4.00	....	....	......	0	0
Rest of district	....	143	......	11	7.1	57.14	0	2
EAST CENTRAL DISTRICT:								
Totals	....	391	......	125	31.5	191.20	1	6
SYRACUSE	88,000	150	20.45	82	54.7	360.00	0	2
Baldwinsville	3,000	1	......	....	....	......	0	0
Cortland	9,000	10	13.33	3	30.0	100.00	0	0
Homer	3,000	1	......	....	....	......	0	0
Oneida	6,018	8	16.00	2	25.0	125.00	0	0
Hamilton	4,000	4	12.00	....	....	......	0	0
Cazenovia	4,363	8	21.82	....	....	......	0	0
Brookfield	3,685	1	......	....	....	......	0	0
Norwich	5,500	9	10.96	....	....	......	0	0
Oneonta	7,000	8	13.71	2	25.0	......	0	0
Worcester	3,000	1	......	....	....	......	0	0
Cooperstown	3,000	2	8.00	2	....	......	0	0
Walton	3,540	6	20.57	1	16.7	......	0	0
Delhi	3,000	5	20.00	....	....	......	0	0
Rest of district	....	177	......	33	18.4	100.00	1	4
WEST CENTRAL DISTRICT:								
Totals	....	243	......	28	11.5	79.00	....	2
AUBURN	26,000	28	13.00	7	25.0	107.13	0	1
ITHACA	10,000	7	......	1	14.3	142.85	0	0
Waterloo	4,500	4	10.67	....	....	......	0	0
Seneca Falls	6,000	11	22.00	2	18.2	91.90	0	0
Geneva	6,000	11	22.00	2	18.2	......	0	0
Canandaigua	6,300	2	......	....	....	......	0	0
Manchester	4,000	2	6.00	....	....	......	0	0
Phelps	7,000	3	......	....	....	......	0	0
Penn Yan	4,500	5	13.33	....	....	......	0	0
Batavia	7,000	13	22.28	2	....	......	0	1
Dansville	3,700	2	......	....	....	......	0	0
Le Roy	5 000	......	......	....	....	......	0	0
Rest of district	....	155	......	14	9.2	64.50	0	0
LAKE ONTARIO & WEST. DIST.:								
Totals	....	1,064	......	525	49.3	309.00	10	14
BUFFALO	255,000	575	27.05	368	64.0	427.80	9	2
Tonawanda	7,000	13	22.28	7	53,8	461.54	0	0
Amherst	4,578	5	13.05	1	20.0	......	0	0
LOCKPORT	15,000	10	......	2	20.0	......	0	0
Niagara	7,000	13	22.28	7	53.8	230.75	1	0
Medina	4,000	8	24.00	3	37.5	......	0	0
Albion	5,000	7	16.80	2	28.5	142.85	0	0
Brockport	4,500	......	......	....	....	......	0	0
ROCHESTER	138,327	227	19.70	96	42.3	312.68	0	5
Palmyra	4,800	5	12.50	....	....	......	0	0
Newark	3,500	1	......	....	....	......	0	0
Lyons	6,000	5	10.00	3	60.0	......	0	0
Clyde	3,000	3	12.00	2	66.6	333.33	0	0
OSWEGO	21,826	20	11.00	6	30.0	50.00	0	0

FOR JULY — (*Continued*).

Malarial diseases	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	2	2	0	2	1	2	1	1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	3	3	8	14	1	17	9	22	23	9	9	17	6
1	....	3	....	....	....	4	61	18	31	2	34	20	30	68	11	23	39	39
1	0	0	0	0	0	1	50	4	17	0	8	4	6	27	2	8	9	11
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	1	1	1	0	2	0	1	1	0	1	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	2	1	2
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	1	0	0	0	0	3	2	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	2	1	2	1	0	1	0
0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	2	0	1	0	0	0	2	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	1	0
0	0	3	0	0	0	2	8	7	12	1	23	9	16	31	7	12	23	18
....	....	1	1	1	1	5	7	10	31	2	20	14	25	49	10	12	24	18
0	0	0	0	0	0	1	2	2	4	0	4	1	3	4	1	1	2	2
0	0	1	0	0	0	0	0	1	1	0	0	0	0	1	0	2	1	0
0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	0	0
0	0	0	0	0	0	0	1	2	1	0	1	1	0	2	1	1	0	1
0	0	0	0	0	0	0	0	0	1	0	2	1	2	2	1	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	1	0	0	1
0	0	0	0	0	0	1	0	1	4	0	0	1	1	1	0	1	1	1
0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	1	1	3	4	4	16	2	12	7	28	33	5	7	19	12
3	....	10	5	1	2	18	266	47	94	6	107	30	62	135	34	64	32	124
1	0	6	4	0	0	13	191	28	44	2	58	10	21	71	10	31	0	74
0	0	0	0	0	0	0	6	0	1	0	1	0	1	1	1	1	0	1
0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	1	1	0
0	0	0	0	0	0	0	0	0	1	0	2	1	2	1	0	2	0	1
0	0	0	0	0	0	1	1	2	0	0	2	0	0	1	1	2	1	1
0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	0	1	0	2
0	0	0	0	0	0	0	1	0	1	0	2	0	1	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	3	0	1	2	4	56	10	21	3	14	5	12	31	8	18	12	22
0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	3
0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
0	0	1	0	0	0	0	0	2	2	0	0	1	5	5	1	0	1	2

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
LAKE ONTARIO & WEST. DIST.—*(Concluded)*:								
Fulton	4.000	5	15.00	....	....	......	0	0
Richland	4,000	......	......	....	....	......	0	0
Rest of district	....	167	......	30	18.0	120.00	0	7
Totals for the State	3,000	11,370	......	5,782	50.	329.72	57	97
Average for July for past six years	....	10,667	......	5,507	51.	325.77	48	91

REMARKS.—In 135 cities, villages and large towns having an aggregate population of about
annum. For the same places in June the death rate was 22.78 For the remaining portion of
annum. A little more than half the deaths occurred under the age of five years, the proportion
diseases, or nearly one-third the total mortality; of these 2,900 were from diarrhœal diseases.
In the rural portion of the State only twenty per cent of the deaths occurred under the age of
were 2,100 more deaths from diarrhœa than in June, and there was just this increase in the total
account of the large number of deaths from diarrhœa. In the other zymotic diseases there is
responds very closely with that of July, 1890.

FOR JULY — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	1	0	0	0	10	5	20	1	25	8	18	22	13	6	14	15
44	....	181	93	19	48	304	2,906	717	1,032	67	1,036	502	652	1,158	239	458	363	1397
60	3	64	84	13	107	321	2,972	613	985	69	873	443	502	1,064	221	476	456	1198

4,800,000, there where 9,760 deaths during July, making a death rate of 25.00 per thousand per
the State, consisting of scattered rural towns, the death rate is about 18.25 per thousand per
being almost exactly the same as in July, 1890. There were 3,750 deaths from ordinary zymotic
which number varies little from that of a year ago, or from the average for the past six years.
five years and only eighty of the 2,900 deaths from diarrhœal diseases occurred there. There
number of deaths. July has uniformly the highest death rate of any month in the year on
little change from that reported last month. From all respiratory diseases the mortality cor-

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPITALS, villages in *italics* and towns in Roman

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	....	6,339		3,119	49.2	287.36	18	90
NEW YORK CITY	1,680,796	3,648	25.56	1,710	46.8	363.30	8	57
BROOKLYN	862,155	1,758	24.10	971	55.2	278.82	8	20
Gravesend	6,912	29	.....	18	62.1	448.27	0	0
New Utrecht	5,000	27	.....	11	40.8	40 .40	0	1
Flatbush	8,000	12	17.50	8	66.6	416.66	0	0
LONG ISLAND CITY	30,396	99	......	51	50.5	386.60	0	2
Newtown	17,549	60	41.15	35	58.3	366.67	0	2
Oyster Bay	12,000	15	15.00	4	22.2	200.00	1	0
Hempstead	18,160	34	22.66	20	68.0	472.0	0	1
North Hempstead	8,000	17	25.50	6	35.2	294.10	0	0
Jamacia	10,089	25	30.00	10	40.0	250.00	0	0
Flushing	16,000	29	21.75	18	62.0	413.80	0	1
Southold	7,500	15	24.00	4	26.7	266.66	0	0
Sag Harbor	3,000	7	28.00	5	71.4	428.57	0	0
Huntington	8,100	12	16.75	6	51.0	250.00	0	0
New Brighton	15,000	32	25.00	5	15.6	125.00	0	0
Edgewater	12,000	42	42.00	21	50.1	285.71	0	0
Port Richmond	3,000	10	33.33	6	50.0	40 .00	0	0
Westfield	7,000	8		2	12.5	125.00	0	0
YONKERS	31,949	60	22.50	34	56.7	433.34	0	1
Westchester	7,000	15	25.71	2	13.3	266.67	0	0
Mount Vernon	11,000	20	236.37	11	55.0	500.00	0	1
Port Chester	5,583	14	30.10	10	71.4	428.57	0	0
Sing Sing	6,500	19	35.08	9	47.4	421.05	0	0
New Rochelle	6, 00	17	31.00	18	82.4	411.82	0	0
Peekskill	7,000	18	30.85	7	38.9	333.33	0	0
Rest of district	....	287	......	122	42.1	2 8.00	1	4
HUDSON VALLEY DISTRICT:								
Totals	....	1,016	......	375	36.9	275.58	7	17
ALBANY	100,000	168	20.16	58	34.7	223.58	2	5
COHOES	22,432	56	29.95	24	42.8	357.14	0	0
TROY	60,605	150	29.73	59	39.3	306.66	0	4
West Troy	13,000	20	18.52	7	35.0	350.00	0	0
Green Island	6,000	9	18.00	6	66.7	444.44	1	0
Lansingburgh	10,000	18	2 .60	8	44.4	388.89	0	1
Hoosick Falls	6,000	16	32.00	10	62.5	625.00	0	0
Greenbush	8,000	9	13.56	1	11.1	333.33	1	0
Coxsackie	4,000	8	24.00	3	37.5	2 0.00	1	0
Catskill	4,930	11	26.40	8	72.8	191.92	0	0
HUDSON	10,027	10	12.00	3	30.0	.....	0	0
KINGSTON	21,181	37	21.00	18	48.6	351.35	2	0
Ellenville	3,000	8	32.00	3	37.5	250.00	0	0
Marbletown	4,000	10	30.00	4	40.0	300.00	0	0
Esopus	4,736	12	30.36	7	58.3	416.67	0	1
Saugerties	4,000	7	21.00	4	57.1	428.57	0	0
POUGHKEEPSIE	22,836	34	17.88	14	41.2	470.50	0	0
Fishkill	10,732	15	18.00	8	53.2	333.33	0	0
Wappinger Falls	5,000	7	16.80	1	14.3	142.85	0	1
NEWBURGH	23,263	46	23.73	20	43.5	247.80	0	0
Port Jervis	9,500	11	13.90	2	18.2	181.81	0	0
Middletown	11,918	22	22.17	7	31.8	136.37	0	0
Goshen	4,500	7	17.78	2	25.7	......	0	0
Haverstraw	7,000	3	......	3	....	......	0	0
Nyack	6,500	11	20.31	7	63.7	363.63	0	0

YORK STATE BOARD OF HEALTH.

districts, cities and towns, during August, 1891.

type. For boundaries of *Sanitary Districts*, see Annual Summary.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhoeal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhoeal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
44	....	95	34	6	42	188	1,302	523	631	56	550	337	323	623	121	392	112	842
23	0	64	26	2	21	111	714	355	399	30	308	204	188	269	68	281	32	488
10	0	24	3	1	11	56	349	132	147	22	187	90	79	242	35	58	30	254
0	0	0	0	0	0	1	12	1	0	1	1	1	1	5	0	4	0	2
0	0	0	0	0	1	0	9	1	1	0	3	3	1	2	1	4	0	0
0	0	0	0	0	0	0	5	0	0	0	2	0	1	2	0	1	0	1
5	0	1	1	2	1	3	24	7	7	0	7	3	4	5	1	3	7	16
1	0	2	1	0	2	0	14	6	3	1	2	1	5	6	0	2	1	11
0	0	1	0	1	0	0	2	0	1	0	0	3	1	1	1	0	2	1
0	0	0	0	0	0	1	14	0	2	0	0	4	1	3	0	3	2	3
1	0	0	0	0	0	0	4	0	2	0	0	0	6	3	0	1	0	0
1	0	0	0	0	0	1	4	1	0	1	2	3	1	3	0	4	1	3
0	0	0	0	0	1	0	10	0	3	0	1	0	1	3	1	2	0	6
0	0	0	0	0	0	0	4	0	0	0	2	0	3	0	0	0	4	2
0	0	0	0	0	0	0	3	0	1	0	0	0	2	1	0	0	0	0
0	0	0	0	0	0	0	3	0	0	0	1	1	0	2	0	0	1	4
0	0	0	0	0	0	1	3	3	2	0	2	3	4	2	7	1	2	2
1	0	0	1	0	1	3	6	2	1	0	2	3	2	5	2	3	2	8
0	0	0	0	0	0	0	4	0	1	0	1	0	1	3	0	0	0	0
0	0	0	0	0	0	0	2	0	2	0	1	0	0	1	0	0	1	1
0	0	2	0	0	0	3	20	5	9	1	0	2	2	7	1	4	2	1
0	0	0	0	0	0	2	2	0	2	0	1	0	0	2	0	6	3	3
1	0	0	0	0	0	0	8	1	2	0	0	0	1	2	0	3	0	1
0	0	1	0	0	0	0	5	0	0	0	1	0	0	4	0	2	1	0
0	0	0	1	0	0	1	6	0	3	0	1	1	1	1	0	0	0	4
0	0	0	0	0	0	1	6	0	0	0	0	1	1	3	0	0	5	0
0	0	0	0	0	2	0	4	0	3	0	1	1	1	3	0	1	1	1
1	0	0	1	0	2	4	65	9	40	0	24	13	16	43	4	15	15	30
5	....	8	....	2	9	15	217	42	112	5	101	33	72	133	24	55	74	85
0	0	1	0	1	2	1	26	12	28	1	9	4	14	27	3	6	8	18
0	0	0	0	0	0	1	19	2	6	1	11	1	5	2	1	1	3	3
0	0	1	0	0	1	4	36	13	13	0	11	7	10	14	3	7	7	19
0	0	1	0	0	0	1	5	1	1	0	2	1	3	1	1	1	1	1
0	0	0	0	0	0	0	3	0	0	1	1	0	0	0	0	1	0	2
1	0	0	0	0	0	0	7	0	1	0	1	0	0	1	1	0	2	3
0	0	3	0	0	0	0	7	0	1	0	1	1	0	1	0	2	0	0
0	0	0	0	0	0	0	2	3	0	0	0	0	2	1	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	1	3
0	0	0	0	0	0	2	0	0	1	0	2	0	1	4	1	0	0	0
0	0	0	0	0	0	0	0	1	2	0	1	0	0	4	0	2	0	0
1	0	0	0	1	0	2	7	1	5	0	4	1	7	1	1	2	2	0
0	0	0	0	0	0	0	2	0	0	0	0	1	1	0	2	0	1	1
0	0	0	0	0	0	0	3	0	1	0	1	1	0	1	0	0	2	1
1	0	0	0	0	0	0	3	0	0	0	1	0	1	1	0	1	0	3
0	0	0	0	0	0	0	3	0	0	0	0	0	0	2	0	1	0	1
0	0	0	0	0	0	1	7	0	5	0	5	1	1	7	0	0	3	4
0	0	0	0	0	0	0	5	1	1	0	2	2	0	2	1	0	0	1
0	0	0	0	0	0	0	0	0	4	0	1	6	0	1	0	0	0	0
1	0	0	0	0	0	0	15	2	3	0	7	1	0	2	2	4	7	2
0	0	0	0	0	0	0	2	0	3	0	2	1	1	0	0	2	0	0
0	0	0	0	0	0	0	8	3	2	0	1	1	1	8	1	1	0	1
0	0	0	0	0	0	0	0	0	3	0	1	0	0	1	0	2	0	0
0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0
0	0	0	0	0	1	0	3	0	1	0	1	0	0	2	0	0	0	3

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VALLEY DIST.—(*Con.*)								
Ramapo	5,000	7	16.80	2	26.5	142.85	0	1
Rest of district	....	304	......	86	28.5	240.00	0	4
ADIRONDACK & NORTH'N DIST.:								
Totals	....	382	......	135	35.3	394.75	1	8
WATERTOWN	14,732	43	35.00	19	44.2	225.56	0	0
Ellisburgh	4,811	6	15.00	1	16.7	......	0	0
Cape Vincent	3,143	3	11.61	1	33.3	......	0	0
Clayton	4,314	4	11.40	1	25.0	......	0	0
OGDENSBURGH	12,000	33	33.00	16	48 5	484.85	0	1
Potsdam	4 000	9	27.00	5	55.5	444.44	0	0
Malone	9,000	15	20.00	9	60.0	466.67	1	0
Plattsburgh	7,000	14	25.00	6	42 8	357.14	0	0
Glens Falls	10.000	25	30.00	11	44.0	360.00	0	0
Whitehall	4.000	8	24.00	6	75.0	750.00	0	0
Fort Edward	5,000	5	12.00	2	40.0	400.00	0	0
Fort Ann	4,267	2	6.00	....	....	......	0	0
Argyle	3,700	5	16.20	1	20.0	400.00	0	0
Salem	3,500	5	17.15	2	40.0	200 00	0	0
Greenwich	4,000	8	24.00	2	25.0	250.00	0	0
Rest of district	....	197	......	53	26.0	221.00	0	2
MOHAWK VALLEY DISTRICT:								
Totals	....	520	......	203	39.0	244.23	....	12
SCHENECTADY	20,000	40	24.00	18	45.0	325.00	0	1
Schoharie	3.350	......	......	....	....	......	0	0
Cobleskill	3,371	2	......	....	....	......	0	0
AMSTERDAM	17,264	26	18.07	11	42.3	500.00	0	0
Fort Plain	3,500	6	20.55	1	16.7	166.67	0	0
Johnstown	6,000	13	26.00	6	46.1	230.50	0	0
GLOVERSVILLE	13,845	23	20.00	14	60.8	478.25	0	0
Little Falls	8,500	10	14.12	6	60.0	700.00	0	1
Herkimer	3,000	4	16.00	2	50.0	250 00	0	0
Ilion	4,200	12	34.28	7	58.3	583.33	0	1
UTICA	44,000	127	34.63	57	44.8	433.07	0	3
Whitestown	5,000	2	......	2	....	......	0	0
ROME	15,000	13	......	4	30.7	307.76	0	0
Boonville	4,000	4	12.00	....	....	250.00	0	1
Camden	3,400	3	10 55	2	66.6	......	0	0
Waterford	5,400	12	26.67	9	75.0	416.33	0	0
Ballston Spa	3,200	6	22.50	2	33.3	333.00	0	0
Saratoga Springs	10,000	41	......	12	29.7	243.85	0	0
Rest of district	....	176	......	50	30.0	244.30	0	5
SOUTHERN TIER DISTRICT:								
Totals	....	378	......	133	35.2	239.10	1	15
BINGHAMTON	35,000	42	14.06	19	46.3	487.80	0	2
Owego	6,000	11	22.00	3	27.3	191.90	0	1
Candor	4,323	10	27.88	5	50.0	600.00	0	1
Waverly	5,000	8	17.21	5	62.5	500.00	0	0
ELMIRA	28,000	62	26.58	28	45.1	580.65	1	8
Horseheads	3.500	4	13.71	1	25.0	250.00	0	0
HORNELLSVILLE	10,000	23	27.60	10	43.4	391.30	0	1
Bath	3,500	6	20.57	1	16.7	......	0	0
CORNING	8 553	15	21.04	9	60.0	600.00	0	0
Olean	8.000	12	18.00	6	50 0	333.33	0	1
Salamanca	6,000	6	12.00	1	16.7	333.33	0	1
JAMESTOWN	15,838	16	12.50	11	68.7	......	0	0
Westfield	3,000	1	......	....	....	......	0	0
Fredonia	3,000	4	16 00	2	50.0	250.00	0	0
Rest of district	....	158	......	32	20.0	215.20	0	5

FOR AUGUST—(*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
1	0	2	0	0	5	3	57	3	31	2	34	10	25	46	7	22	35	17
....	....	1	3	....	1	12	91	10	38	3	31	13	36	40	12	13	41	33
0	0	0	0	0	0	0	14	2	3	1	6	0	2	4	1	0	6	4
0	0	0	0	0	0	0	0	0	1	0	2	0	0	3	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0
0	0	0	0	0	0	4	11	0	3	0	0	0	1	4	1	0	1	7
0	0	0	0	0	0	0	4	0	1	0	0	0	0	2	1	0	0	1
0	0	0	2	0	0	0	4	1	0	0	1	1	1	3	0	0	1	0
0	0	0	0	0	0	1	4	0	1	0	0	0	4	2	0	0	0	2
0	0	0	0	0	0	0	9	1	2	0	2	1	0	3	1	0	3	3
0	0	0	0	0	0	3	3	1	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	1	0	2	0	1	0	1	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	1	1	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	0
0	0	0	0	0	0	0	2	0	1	0	2	10	0	0	1	0	2	0
0	0	1	1	0	1	4	35	4	24	2	17	0	28	16	6	9	23	14
6	....	3	2	2	5	15	133	8	44	5	36	14	40	59	13	30	54	39
1	0	0	1	0	0	2	8	0	2	0	3	1	3	5	2	3	5	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
0	0	3	0	0	1	0	9	1	2	0	1	2	2	3	0	1	0	0
0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	1	1	0	1
0	0	0	0	0	0	0	3	0	1	0	1	0	0	3	0	0	2	3
1	0	0	0	0	2	0	8	1	2	0	0	1	2	1	0	0	0	0
0	0	0	0	0	0	0	6	0	0	0	2	0	0	1	0	1	0	1
0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	5
0	0	0	0	1	0	0	5	1	0	0	0	0	2	1	0	0	0	1
2	0	0	0	0	2	7	41	0	14	2	3	0	8	19	3	7	12	4
0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	3	0	0	1	2	0	1	0	1	1	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
0	0	0	0	0	0	0	5	0	1	0	3	0	1	0	0	0	1	1
0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	1	2
0	0	0	0	0	0	1	9	1	3	0	3	4	4	7	1	1	4	3
2	0	0	1	1	0	5	30	4	16	1	17	6	15	16	4	15	27	11
1	....	1	....	1	1	11	98	14	27	2	45	8	23	36	13	19	40	22
0	0	0	0	0	1	0	17	1	5	0	4	0	1	3	4	4	0	0
0	0	0	0	0	0	0	1	0	2	0	1	0	0	3	0	0	3	0
0	0	0	0	0	0	0	5	0	0	0	1	0	0	2	0	1	0	0
0	0	0	0	0	0	0	4	0	1	0	2	0	0	0	1	0	0	0
0	0	0	0	0	0	9	23	1	0	0	4	1	6	6	1	1	2	4
0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0
0	0	0	0	0	0	0	8	0	1	0	1	0	2	2	2	3	1	2
0	0	0	0	0	0	0	0	0	3	0	0	0	1	1	1	0	0	0
0	0	0	0	0	0	0	9	1	2	0	2	0	0	1	0	0	0	0
0	0	0	0	0	0	0	3	1	1	0	1	1	0	1	1	1	0	1
0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	1	0	0	0	0	2	1	0	1	1	1
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0
0	0	1	0	1	0	2	25	9	9	2	17	6	11	16	2	8	31	13

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever	Typhoid fever.
EAST CENTRAL DISTRICT:								
Totals	....	457	......	157	28.8	266.80	3	8
SYRACUSE	88,000	180	24.55	80	44.4	411.11	0	5
Baldwinsville	3,000	9	36.00	6	66.6	555.55	0	0
Cortland	9,000	9	12.00	3	33.3	333.33	0	1
Homer	3,000	5	20.00	3	60.0	600.00	0	0
Oneida	6,018	5	10.00	2	40.0	......	0	0
Hamilton	4,000	5	15.00	....	....	......	0	0
Cazenovia	4,363	10	27.28	2	20.0	300.00	0	0
Brookfield	3,685	2		....	....	......	0	0
Norwich	5,500	9	19.63	5	55.5	555.55	0	0
Oneonta	7,000	11	18.85	10	90.9	909.00	0	0
Worcester	3,000	1	9.00	....	...		0	0
Cooperstown	3,000	1	4.00	....	....	......	0	0
Walton	3,540	4	13.71	3	75.0	750.00	0	0
Delhi	3,000	3	12.00	....	....	......	0	0
Rest of district	....	203	......	43	21.0	132.50	3	2
WEST CENTRAL DISTRICT:								
Totals	....	365	......	105	28.7	200.00	....	4
AUBURN	26,000	44	20.03	19	43.2	250.00	0	0
ITHACA	10,000	10	12.00	2	20.0	200.00	0	1
Waterloo	4,500	9	24.00	2	22.2	......	0	0
Seneca Falls	6,000	21	42.00	9	42.8	428.57	0	1
Geneva	6,000	10	20.00	4	40.0	400.00	0	0
Canandaigua	6,300	11	20.95	3	27.3	272.73	0	0
Manchester	4,000	6	18.00	1	16.7	......	0	0
Phelps	7,000	6	10.30	2	33.3	......	0	0
Penn Yan	4,500	8	21.33	3	37.5	250.00	0	0
Batavia	7,000	8	13.71	5	62.5	500.00	0	0
Dansville	3,700	8	25.94	4	50.0	250.00	0	0
Le Roy	5,000	7	16.80	1	14.3	128.70	0	0
Rest of district	....	217	......	50	23.1	160.00	0	2
LAKE ONTARIO & WEST. DIST:								
Totals	....	1,275	......	602	47.2	360.00	8	22
BUFFALO	255,000	601	28.24	348	58.0	400.00	7	16
Tonawanda	7,000	15	25.70	9	60.0	90.91	0	0
Amherst	4,578	5	13.45	4	80.0	800.00	0	0
LOCKPORT	15,000	11	......	4	36.4	363.64	0	0
Niagara	7,000	19	32.57	9	47.4	421.05	0	0
Medina	4,000	4	12.00	..	....	......	0	0
Albion	5,000	7	16.80	3	42.7	285.70	0	0
Brockport	4,500	6	16.00	....	....	......	0	0
ROCHESTER	138,327	256	22.14	110	42.9	251.56	0	2
Palmyra	4,800	2	......	....	....	......	0	0
Newark	3,500	7	24.00	2	28.5	285.70	0	0
Lyons	6,000	17	34.00	9	52.9	352.90	0	0
Clyde	3,000	9	36.00	5	55.5	222.22	0	0
OSWEGO	21,826	52	28.60	25	48.1	384.61	0	1
Fulton	4,000	5	15.00	2	40.0	......	0	0
Richland	4,000	1	......	....	....	......	0	0
Rest of district	....	258	......	72	27.7	277.45	1	3
Totals for the State	....	10,720	......	4,829	45.0	297.12	38	171
Average for Aug. for past six years	....	9,287	......	4,218	45.5	307.20	43	161

REMARKS.— Mortality reports from 138 cities, villages and large towns, having an aggregate 8,913, making a death rate per thousand of 24.34 per annum; in July the death rate for the under five years of age, and 31.0 per cent of the deaths were from zymotic diseases. 23.3 per deaths occurring in rural districts, 28.0 per cent were of children under five years of age and *vary little from* the average for six years, the zymotic and diarrhœal mortality being a little *August and continues* through the fall months; the increase *over* July is chiefly in the maritime *There were fewer* deaths from scarlet fever, measles and diphtheria than in July, and a *chiefly from* drowning and railway injuries.

FOR AUGUST — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
3	....	1	....	....	....	1	127	9	43	5	33	27	22	55	21	23	48	28
2	0	0	0	0	0	0	67	3	14	1	10	9	5	14	8	11	15	16
0	0	0	0	0	0	0	5	0	1	0	2	0	0	0	0	0	0	1
0	0	0	0	0	0	0	2	0	1	0	0	0	1	1	0	1	1	1
0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	2	0
0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	0
0	0	0	0	0	0	0	3	0	1	0	1	0	0	2	0	0	3	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	5	0	1	0	0	1	0	1	1	0	0	0
0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
1	0	1	0	0	0	1	29	5	23	4	17	16	15	33	10	10	24	9
....	....	....	....	....	...	1	68	19	41	1	35	17	27	51	12	22	35	32
0	0	0	0	0	0	0	11	2	6	0	5	2	2	8	0	2	0	6
0	0	0	0	0	0	0	1	0	1	0	1	1	0	3	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	1	1	1	3	0	0	0	2
0	0	0	0	0	0	0	8	2	2	0	2	1	1	2	1	0	0	1
0	0	0	0	0	0	0	4	0	2	0	1	0	0	1	0	0	2	0
0	0	0	0	0	0	0	3	0	3	0	2	0	0	1	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	1	1
0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	0	2
0	0	0	0	0	0	0	2	0	0	0	0	3	0	2	0	0	0	1
0	0	0	0	0	0	0	4	0	1	0	0	0	1	0	0	0	1	1
0	0	0	0	0	0	0	2	1	0	0	0	1	1	1	0	0	0	2
0	0	0	0	0	0	0	1	1	0	0	0	0	2	1	1	0	1	0
0	0	0	0	0	0	1	32	12	24	1	23	7	17	28	9	19	28	14
8	....	8	2	3	6	23	369	50	105	10	94	31	69	136	41	63	73	154
5	0	6	1	1	3	16	185	26	48	6	58	9	28	57	12	23	0	94
0	0	0	0	0	0	0	1	0	1	0	3	0	1	4	0	1	1	3
0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	3	0	1	0	1	1	2	1	0	1	0	1
0	0	0	0	0	0	1	7	0	3	0	3	0	1	2	0	1	1	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0
0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	0	2	0
0	0	1	0	1	1	3	81	11	17	3	7	8	13	33	8	14	25	28
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
0	0	0	0	0	0	0	2	0	1	0	1	0	0	1	0	1	1	0
0	0	0	0	0	1	0	5	2	1	1	0	1	0	1	2	0	1	2
0	0	0	0	0	0	0	2	3	0	0	1	0	0	0	0	3	0	0
1	0	1	0	0	0	0	17	1	5	0	1	2	4	6	1	1	2	9
0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2	0	0	1	1	0	3	61	5	26	0	16	8	19	28	16	16	36	16
67 88	 1	120 50	41 53	14 12	64 134	266 269	2,405 2,042	675 581	1,041 970	87 66	925 731	480 404	612 480	1,133 983	257 221	617 419	477 443	1235 1134

population of 4,311,000, show the total number of deaths from all causes in August to have been
same places was 25.00, and in June 22.78; 50.4 per cent. of the deaths in these localities were
cent being from diarrhœal diseases, nearly one-fourth of the total urban mortality. Of 1,800
23.0 were from zymotic diseases, 18.5 being from diarrhœa. For the State these proportions
lower than the average. Typhoid fever shows the usual increase which always begins in
district which ordinarily has a lower death [illegible] m this cause than the other sanitary districts.
moderate increase from whooping cough. [illegible] were more deaths than usual from accidents.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPITALS, villages in *italics* and towns in Roman

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	....	5,587	......	2,642	47.2	245.18	33	117
NEW YORK CITY	1,680,796	3,231	23.39	1,529	47.3	348.50	20	65
BROOKLYN	862,155	1,608	22.69	840	52.1	251.25	9	34
Gravesend	6,912	14	24.00	8	57.1	428.57	0	1
New Utrecht	8 854	17	23.00	6	35.3	353 00	0	1
Flatbush	12,338	24	23.34	7	29.2	250.00	0	0
LONG ISLAND CITY	30,396	83	32.75	30	36.1	301.20	0	3
Newtown	17,549	37	25.29	20	54.0	351.51	0	1
Oyster Bay	13,870	23	19.90	11	47.8	217.38	0	0
Hempstead	23,752	22	......	7	33.0	268.00	0	0
North Hempstead	8,134	16	23.58	6	37.5	500.00	0	0
Jamaica	14,441	20	17.00	5	25.0	200.00	0	0
Flushing	19 803	31	18.20	7	23.3	200.00	0	1
Southold	7,705	13	20.25	3	23.1	76.92	0	0
Sag Harbor	3,000	6	24.00	3	50.0	333.33	0	0
Huntington	8,277	12	17.35	4	33.3	150.00	0	0
New Brighton	16,423	16	12.00	2	12.5	62.50	0	0
Edgewater	14,293	28	23.50	12	42.8	357.14	0	1
Port Richmond	6,290	4	......	3	75.0	......	0	0
Westfield	8,258	7	......	2	28.5	142.85	0	0
YONKERS	32,033	50	18.75	20	40.0	260.00	0	1
Westchester	10,029	20	24.00	8	40.0	300.00	0	2
Mount Vernon	11,000	9	......	1	11.1	......	0	0
Port Chester	5,583	8	17.20	4	50.0	500.00	0	1
Sing Sing	9,352	20	25.66	7	35.0	200.00	0	0
New Rochelle	8,217	25	36.58	11	44.0	240.00	0	1
Peekskill	9,676	18	22.26	6	33.3	55.55	0	0
Rest of district	....	225	......	70	31.1	208.85	4	5
HUDSON VALLEY DISTRICT:								
Totals	....	937	......	281	30.0	343.60	8	41
ALBANY	100,000	153	18.36	49	38.5	235.10	2	4
COHOES	22,509	41	21.85	21	51.2	341.46	0	1
TROY	60,956	133	26.16	47	35.3	263.15	2	9
West Troy	13,000	19	16.78	4	21.0	......	0	0
Green Island	4,463	4	......	......	......	250.00	0	1
Lansingburgh	10,550	23	26.16	8	34.8	391.60	0	4
Hoosick Falls	7,014	12	24.00	5	41.6	145.66	0	1
Greenbush	7 301	15	24.65	6	40.0	200.00	2	0
Coxsackie	4,000	8	24.00	1	12.5	125.00	0	0
Catskill	4,930	......	......	......	......	......	0	0
HUDSON	10,000	13	15.60	5	38.4	307.85	0	0
KINGSTON	21,261	33	18.60	14	42.5	333.33	1	0
Ellenville	3,000	4	16.00	1	25.0	500.00	0	1
Marbletown	4,000	3	9.00	1	33.3	......	0	0
Esopus	4,659	9	23.00	2	22.2	111.11	0	0
Saugerties	4,237	4	11.40	1	25.0	250.00	0	1
POUGHKEEPSIE	22,206	30	16.36	9	30.0	233.33	0	0
Fishkill	10,732	1	......	......		......	0	0
Wappinger Falls	3,718	6	19.35	2	33.3	166.67	0	0
NEWBURGH	21,087	40	20.87	10	25.0	200.00	0	0
Port Jervis	9,327	13	16.78	4	30.8	230.78	0	1
Middletown	11,977	17	17.00	5	29.0	352.00	0	2
Goshen	5,021	8	19.20	1	12.5	......	0	0

YORK STATE BOARD OF HEALTH.

districts, cities and towns, during September, 1891.

type. For boundaries of *Sanitary Districts*, see Annual Summary.]

Malarial diseases.	Small-pox.	Scarlet fever	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
54	....	73	19	11	35	224	807	520	658	89	466	307	295	532	149	265	89	844
25	0	42	15	5	21	139	454	349	421	27	257	180	156	256	81	180	25	573
16	0	23	4	6	6	66	239	143	153	10	154	87	83	182	42	45	18	288
0	0	0	0	0	0	0	5	0	1	0	1	1	1	2	0	1	0	1
0	0	0	0	0	2	0	3	0	1	0	3	1	0	3	2	1	0	0
1	0	0	0	0	0	1	4	1	4	1	2	0	0	5	2	0	1	2
1	0	3	0	0	1	5	12	6	7	0	3	5	6	8	1	4	1	17
1	0	0	0	0	0	1	10	4	1	0	0	1	1	8	0	0	1	8
0	0	0	0	0	0	0	5	0	1	0	3	1	2	3	0	3	2	3
1	0	0	0	0	1	0	4	1	2	0	0	2	2	5		0	2	1
1	0	0	0	0	1	1	5	0	2	0	3	2	0	0	0	1	0	0
2	0	1	0	0	0	0	1	1	1	0	2	3	0	4	0	1	2	2
1	0	0	0	0	0	2	2	2	5	0	5	2	3	2	2	2	2	0
0	0	0	0	0	1	0	0	0	0	0	2	1	0	2	1	3	2	1
0	0	0	0	0	0	0	2	0	2	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	1	2	0	0	0	1	1	2	1	2	0	1	1
0	0	0	0	0	0	0	1	0	4	0	3	0	1	1	1	2	2	1
0	0	0	0	0	1	0	8	1	3	0	1	0	1	5	0	3	2	2
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	1
0	0	0	0	0	0	0	1	0	0	0	0	0	1	2	0	0	1	2
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0	0	0	0	0	0	0	4	1	2	0	1	2	1	2	1	3	0	1
0	0	0	0	0	0	0	0	0	3	0	1	0	0	3	1	0	1	0
0	0	0	0	0	0	0	3	0	0	0	1	0	0	1	1	1	0	0
0	0	0	0	0	0	1	3	1	4	0	2	0	0	2	0	0.	1	6
2	0	0	0	0	0	1	2	1	1	0	3	1	4	4	1	0	1	8
0	0	0	0	0	0	0	1	0	3	0	0	1	0	3	0	2	4	4
2	0	4	0	0	1	4	27	3	32	1	17	12	24	20	6	11	18	34
10	....	8	2	1	9	27	123	65	107	7	106	42	57	123	22	47	60	72
3	0	1	2	0	4	5	16	14	21	3	12	7	16	17	3	7	2	14
0	0	0	0	0	0	4	9	0	2	0	6	4	1	6	0	0	4	4
0	0	0	0	0	0	3	21	18	13	0	13	6	2	22	3	4	5	12
0	0	0	0	0	0	0	0	4	6	0	8	0	0	2	0	2	1	1
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	5	3	3	1	2	1	0	2	0	1	1	0
0	0	3	0	0	0	0	1	0	1	0	0	0	0	1	0	1	1	3
0	0	0	0	0	0	0	1	0	1	0	2	3	3	0	0	1	0	2
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2	0	1	0	0	0	0	7	0	4	3	6	1	5	3	0	0	0	0
0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
0	0	0	0	0	0	0	1	0	1	0	3	0	0	0	1	0	2	1
0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
0	0	0	0	0	1	0	6	2	3	0	1	2	0	5	2	3	0	5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	1	0	2	0	0	0	0	2	0	0	0	1
2	0	0	0	0	0	0	6	4	6	0	2	0	2	8	1	3	4	2
0	0	0	0	0	0	0	2	1	3	0	2	0	2	0	0	2	0	0
0	0	0	0	0	1	1	2	0	0	0	2	0	0	7	0	1	0	1
0	0	0	0	0	0	0	0	1	2	0	0	2	1	1	0	0	1	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever	Typhoid fever.
HUDSON VALLEY DIST.—(*Con.*):								
Nyack	4,111	7	20.52	3	42.8	......	0	0
Ramapo	5,911	5	10.00	3	60.0	400.00	0	0
Rest of district	....	336	......	80	23.8	232.18	1	16
ADIRONDACK & NORTH'N DIST.:								
Totals	....	370	......	123	33.3	291.50	4	9
WATERTOWN	14,725	21	17.10	8	38.1	238.10	0	0
Ellisburgh	4.154	2	......	....	....	......	0	0
Cape Vincent	3.014	3	12.00	1	33.3	333 33	0	0
Clayton	4,411	5	13.64	2	40.0	......	0	0
OGDENSBURGH	11,662	18	18.52	4	22.2	388.88	3	1
Potsdam	4,000	2	6.00	1	50.0	500.00	0	0
Malone	5.000	14	33.60	6	42.8	214 28	0	0
Plattsburgh	7,000	11	18.85	6	54.5	545.45	0	0
Glens Falls	9.509	17	21.47	8	47.0	294.10	0	0
Whitehall	4,434	8	21.64	3	37.5	625.00	0	0
Fort Edward	4.424	7	18.67	4	57.1	142.85	0	0
Fort Ann	2,696	5	22.23	2	40.0	600.00	0	0
Argyle	2,313	1	......	....	....	......	0	0
Salem	3,127	5	19.20	1	20.0	400.00	0	0
Greenwich	4,196	5	14.30	2	40.0	......	0	0
Rest of district	....	246	......	75	30.0	280.00	1	8
MOHAWK VALLEY DISTRICT:								
Totals	....	531	......	151	28.6	222.10	1	23
SCHENECTADY	20,000	44	26.40	24	54.5	227.27	0	1
Schoharie	3,000	1	......	1	....	......	0	0
Cobleskill	3,443	6	20.87	....	....	166.67	0	1
AMSTERDAM	17,336	24	......	12	50.0	458.25	0	2
Fort Plain	3,000	1	4.00	....	....	......	0	0
Johnstown	7,768	11	17.00	3	27.3	272.72	0	2
GLOVERSVILLE	13,864	18	15.58	11	61.1	500.00	0	0
Little Falls	8,783	18	19.12	5	28.5	357.10	1	3
Herkimer	3,000	6	24.00	3	50.0	666.67	0	0
Ilion	4,057	2	6.00	...	....	500.00	0	1
UTICA	44,000	71	19.37	23	32.3	42.25	0	0
Whitestown	5,155	9	20.80	3	33.3	333.33	0	0
ROME	15,000	28	22.40	9	32.1	285.71	0	0
Boonville	3,509	5	17.14	1	20.0	200.00	0	0
Camden	3,400	6	21.18	1	16.7	166.67	0	0
Waterford	5,286	14	31.78	6	42.8	285.71	0	0
Ballston Spa	3,527	5	17.00	1	20.0	200.00	0	1
Saratoga Springs	12,000	24	24.00	4	16.7	166.67	0	0
Rest of district	....	238	......	45	18.7	200.00	0	12
SOUTHERN TIER DISTRICT:								
Totals	....	402	......	115	28.7	257.50	3	13
BINGHAMTON	35,000	50	17.15	20	40.0	305.00	1	2
Owego	6,000	8	16.00	1	12.5	250.00	0	1
Candor	3,674	6	19.62	2	33.3	333.33	0	1
Waverly	4,213	4	11.44	1	25.0	......	0	0
ELMIRA	30,893	34	13.20	8	23.5	205.60	0	0
Horseheads	3,500	7	24.00	4	57.1	142.85	0	0
HORNELLSVILLE	11,000	16	17.45	6	42.5	437.50	0	2
CORNING	8,550	17	23.85	7	41.2	176.45	0	0

FOR SEPTEMBER — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	2
0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	1	1	0
3	0	3	0	1	3	13	38	17	34	0	49	12	22	39	12	15	35	23
3	....	2	....	....	1	9	80	8	33	3	29	15	35	26	17	21	38	37
0	0	0	0	0	0	0	5	0	4	0	3	1	2	0	1	0	2	3
0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3
0	0	0	0	0	0	1	2	0	2	1	0	0	4	0	0	3	1	0
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0	0	0	0	0	0	0	3	1	1	0	1	0	2	1	0	2	1	2
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0	0	0	0	0	0	0	5	2	1	0	3	1	2	0	0	0	1	2
0	0	0	0	0	0	4	1	0	1	0	0	0	0	2	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	0	0	1	2
1	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	2	1	0	0	1	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	0	0	1
2	0	2	0	0	1	3	52	4	23	1	17	12	24	16	14	16	28	22
2	....	5	....	1	....	13	73	34	51	5	63	21	44	54	22	23	56	40
1	0	0	0	0	0	1	7	2	1	0	10	1	3	3	1	3	4	6
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	2	0
0	0	3	0	0	0	0	6	3	0	2	0	0	1	1	1	0	0	5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	1	0	2	0	3	1	0	0	0	0	0	2
0	0	0	0	0	0	1	8	1	2	0	0	0	3	0	1	0	0	2
0	0	0	0	0	0	0	2	1	4	0	0	1	0	0	0	2	1	3
0	0	0	0	0	0	1	3	0	1	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	1	2	9	10	0	12	7	8	14	1	3	2	2
0	0	0	0	0	0	0	3	1	0	0	1	0	0	1	0	1	2	0
0	0	0	0	1	0	1	6	1	2	0	0	0	2	2	3	2	4	4
0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	1	0	1	1
0	0	0	0	0	0	2	2	1	2	0	0	0	0	1	1	0	0	5
0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1
0	0	0	0	0	0	0	4	1	2	0	5	2	4	0	2	0	2	2
1	0	2	0	0	0	6	27	14	22	3	30	9	22	27	10	10	36	7
1	....	....	....	....	1	13	72	16	32	3	49	18	30	53	16	16	33	33
1	0	0	0	0	0	0	11	4	6	0	5	0	4	7	1	1	1	6
0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	2	0	0	1
0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	1	0	1
0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	1	0	0
0	0	0	0	0	0	6	1	3	1	0	4	0	4	10	3	0	0	2
0	0	0	0	0	0	0	1	0	2	0	2	0	0	0	0	0	0	2
0	0	0	0	0	0	0	5	2	1	0	0	0	0	2	1	0	1	2
0	0	0	0	0	0	0	3	0	3	0	2	1	1	1	0	1	1	4

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
SOUTHERN TIER DIST. — (*Cont'd*):								
Olean	7,358	14	22.82	5	35.7	142.85	0	0
Salamanca	3,692	9	29.16	2	22.2	333.33	0	0
JAMESTOWN	16,038	25	18.75	8	32.0	280.00	1	1
Westfield	3,000	1	......	....	....	......	0	0
Fredonia	3,400	8	28.24	1	12.5	......	0	0
Rest of district	....	203	......	50	24.8	268.00	1	6
EAST CENTRAL DISTRICT:								
Totals	....	437	......	181	41.4	270.00	4	18
SYRACUSE	88,143	133	18.10	54	48.1	278.20	3	5
Baldwinsville	3,000	2	8.00	1	50.0	......	0	0
Cortland	8,590	16	22.32	6	37.5	375.00	0	3
Homer	3,000	4	16.00	2	50.0	500.00	0	0
Oneida	6,083	4	8.00	....	....	250.00	0	0
Hamilton	4,000	8	24.00	....	....	......	0	0
Cazenovia	4,182	8	22.85	3	37.5	375.00	0	1
Brookfield	3,262	4	14.55	1	25.0	250.00	0	0
Norwich	5,212	9	21.75	3	33.3	333.33	0	1
Oneonta	6,272	9	17.15	4	44.4	555.55	0	0
Worcester	3,000	4	16.00	1	25.0	250.00	0	1
Cooperstown	3,000	4	16.00	1	25.0	......	0	0
Walton	4,543	5	18.21	2	40.0	400.00	0	0
Delhi	3,000	4	16.00	....	....	......	0	0
Rest of district	....	223	......	53	23.8	255.60	1	7
WEST CENTRAL DISTRICT:								
Totals	....	327	......	57	17.3	160.15	....	14
AUBURN	25,858	28	12.80	5	17.8	214.25	0	3
ITHACA	11,079	20	21.62	3	15.0	75.00	0	0
Waterloo	4,350	4	......	....	....	......	0	0
Seneca Falls	6,116	12	23.52	7	58.3	500.00	0	0
Geneva	7,557	21	33.32	7	33.3	237.75	0	1
Canandaigua	5,868	5	......	2	40.0	400.00	0	0
Manchester	4.439	7	18.93	1	14.3	......	0	0
Phelps	5,036	8	17.20	1	12.5	250.00	0	1
Penn Yan	4,254	3	......	....	....	......	0	0
Batavia	7,221	15	24.30	3	20.0	272.73	0	2
Dansville	3,758	5	15.95	....	....	......	0	0
Rest of district	....	199	......	28	24.0	230.00	0	7
LAKE ONTARIO & WEST. DIST.:								
Totals	....	1,071	......	435	40.6	269.20	6	52
BUFFALO	255,664	511	23.98	255	49.9	285.71	2	22
Tonawanda	7,145	14	23.50	3	21.4	428.71	0	4
Amherst	4,014	4	12.00	....	....	500.00	0	1
LOCKPORT	16,058	16	12.00	2	12.5	187.50	0	0
Niagara	10,975	16	17.45	5	31.2	187.50	0	0
Medina	4,500	4	10.70	2	50.0	......	0	0
Albion	4,586	5	13.05	....	....	......	0	0
Brockport	3,742	3	......	....	....	......	0	0
ROCHESTER	138,327	213	18.41	96	45.0	220.66	0	8
Palmyra	4,188	9	25.71	4	44.4	111.11	0	0
Newark	3,000	6	24.00	1	16.7	166.67	1	0
Lyons	6,000	9	18.00	3	33.3	333.33	0	3
Clyde	3,000	4	16.00	1	25.0	......	0	0

SEPTEMBER — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhoeal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhoeal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	2	0	3	0	2	0	2	2	0	0	2	1
0	0	0	0	0	0	2	1	1	0	0	2	0	1	0	0	1	0	1
0	0	0	0	0	0	0	5	1	0	2	6	1	1	1	1	4	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	2	1	1	1	0	0	2	0
0	0	0	0	0	1	5	41	5	12	1	24	15	15	24	8	7	25	13
3	....	1	....	....	1	5	86	11	42	....	45	23	25	43	16	18	52	44
1	0	0	0	0	1	3	24	5	20	0	10	2	4	6	8	10	10	21
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	3	0	1	0	0	2	0	3	0	1	0	3
0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	1	0
0	0	0	0	0	0	1	0	0	2	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	3	0	0	2	0	0	3	0
0	0	0	0	0	0	0	2	0	0	0	1	0	0	1	0	0	2	1
0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	1
1	0	0	0	0	0	0	1	0	1	0	0	0	1	2	0	0	1	1
0	0	0	0	0	0	0	5	0	0	0	0	0	2	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
*0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1
0	0	0	0	0	0	0	2	0	0	0	1	0	1	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0
1	0	1	0	0	0	1	46	6	18	0	30	16	14	23	5	6	34	14
1	....	....	....	....	3	1	34	15	31	....	39	16	27	37	21	11	51	26
0	0	0	0	0	0	0	3	1	3	0	3	2	1	4	1	1	3	3
0	0	0	0	0	0	0	1	2	3	0	2	1	1	2	4	1	0	3
0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	1	0	0
0	0	0	0	0	0	0	6	1	1	0	0	1	0	0	0	0	2	1
0	0	0	0	0	3	0	2	1	2	0	3	2	2	3	0	0	1	1
0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	4	0
0	0	0	0	0	0	0	1	0	1	0	2	0	1	1	1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
1	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	3	4
0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	2	0	0	0
0	0	0	0	0	0	1	18	8	15	0	27	9	20	24	13	8	36	13
9	....	10	....	....	10	42	159	51	85	8	127	37	83	129	26	48	42	147
5	0	7	0	0	3	26	81	28	37	3	67	14	28	55	11	27	0	95
1	0	0	0	0	0	0	1	1	0	0	2	0	4	0	0	0	1	0
0		0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0
1	0	1	0	0	0	0	1	2	3	0	3	1	2	0	0	0	2	0
0	0	0	0	0	0	0	3	0	1	0	2	1	2	2	0	2	0	3
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	1
0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0
1	0	0	0	0	3	7	28	15	19	1	18	10	14	41	4	9	11	24
0	0	0	0	0	1	0	0	0	0	0	1	1	1	0	1	0	1	3
0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	2	0
0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	2	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever	Typhoid fever.
LAKE ONTARIO & WEST. DIST.—(*Concluded*):								
OSWEGO	21,842	29	15.95	7	24.1	172.42	0	0
Fulton.	4,214	6	17.65	3	50.0	166.67	0	0
Richland	3,771	6	19.10	....	....	166.67	0	1
Rest of district	....	216	......	53	24.5	318.10	3	13
Totals for the State	....	9,662	......	3,984	41.2	247.04	59	287
Average for Sept. for past six years.	....	8,151	......	3.257	40.0	244.30	31	224

REMARKS.—The month of September, compared with the preceding month, shows a
from which cause there were about 1,000 fewer deaths; there was also a small diminution in
fever increased from 171 to 287 deaths, and diphtheria from 266 to 334 deaths. The number of
fewer deaths occurred from accidents, chiefly drowning. The total number of reported deaths
mortality is 1,000 greater, the increase being, among local diseases, in deaths from diseases of
more deaths, the increase showing, relatively, in diarrhœal diseases, diphtheria, typhoid fever
Russell, and a considerable prevalence is noted in localities in the Maritime district and along
localities, and there were 100 more deaths in the State from this cause than one year ago. In thirty
thousand; 2.44 per cent of all deaths were from typhoid fever, and 4.04 from diphtheria. In
deaths from typhoid fever is 4.90, and from diphtheria 2.74. Of 1,886 deaths occurring in rural
diphtheria.

FOR SEPTEMBER — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	1	0	0	0	0	4	0	1	0	6	0	5	5	0	1	3	3
0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	0	0	0	2
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	2
1	0	1	0	0	3	8	40	3	21	4	22	10	24	20	8	8	17	10
83	0	99	21	13	60	334	1434	720	1,039	65	924	479	596	997	289	449	421	1293
100	3	52	25	14	99	303	1140	671	966	53	660	425	482	817	212	340	484	1074

diminished infant and zymotic death rate, the chief diminution being in diarrhœal diseases,
scarlet fever and measles. From malarial diseases there was a moderate increase; typhoid
deaths attributed to diseases of the nervous system is considerably less and about one-third
from all causes is 1,000 less than in August. Compared with September, 1890, the total reported
the digestive and nervous systems, and from zymotic diseases there were about four per cent
and scarlet fever. Typhoid fever epidemics have been reported from Auburn, Laurens, and
the Mohawk valley. Diphtheria has been unusually prevalent, epidemically, in numerous
cities, with an aggregate population of 3,657,500, the average annual death rate is 22.10 per
forty-seven large villages with 417,000 population, the death rate is 19.80; the percentage of
towns, not specified in the Bulletin, 3.92 per cent were from typhoid fever, and 2.12 from

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VALLEY DIST.—(*Con.*):								
Haverstraw	9,079	8	10.65	5	62.5	......	0	0
Nyack	5,603	8	17.15	3	37.5	......	0	0
Ramapo	5,910	2	......	....	....	......	0	0
Rest of district	....	306	......	55	18.2	153.00	1	12
ADIRONDACK & NORTH'N DIST.								
Totals	....	404	......	116	28.8	268.50	2	20
WATERTOWN	14,725	27	22.00	7	25.9	222.22	0	8
Ellisburgh	4,145	8	23 00	1	12.5	125.00	0	0
Cape Vincent	3,014	2	8.00	....	....	......	0	0
Clayton	4,411	5	13.60	....	....	......	0	0
OGDENSBURGH	11,662	19	19.57	10	52.6	315.80	0	0
Gouverneur	5,851	11	22.55	1	9.0	272.72	1	2
Potsdam	4,000	......	......	....	....	......	0	0
Malone	5,000	5	12.00	2	40.0	400.00	0	1
Plattsburgh	7,000	7	12.00	2	28.5	285.70	0	0
Glens Falls	9,509	13	16.45	6	46.1	230.50	0	0
Whitehall	4,434	5	13.50	1	20.0	400.00	0	0
Fort Edward	4 424	6	16 27	1	16.7	166.67	0	0
Fort Ann	2,700	4	17.76	2	50.0	500.00	0	0
Argyle	2,313	5	26.00	....	....	......	0	0
Salem	3,127	5	19.20	....	....	......	0	0
Greenwich	4,196	18	......	1	6.0	120.00	0	1
Rest of district	....	264	......	82	30.6	284.61	1	13
MOHAWK VALLEY DISTRICT:								
Totals	....	522	......	124	23.5	186.50	4	24
SCHENECTADY	20,000	49	29.40	14	29.0	194.83	0	2
Schoharie	3,000	6	24.00	3	50.0	333.33	0	0
Cobleskill	3,443	2	6.96	....	....	......	0	0
AMSTERDAM	17,336	38	26.40	10	26.3	315.80	2	0
Fort Plain	3,000	4	16.00	....	....	500.00	0	2
Johnstown	7,768	15	21.64	3	21.4	71.43	0	1
GLOVERSVILLE	13,864	15	13.05	5	33.3	133.33	0	0
Little Falls	8,783	8	11.50	1	12.5	125.00	0	0
Herkimer	3,000	3	12.00	1	33.3	......	0	0
Ilion	4,057	11	32.85	3	27.3	454.55	0	2
UTICA	44,007	85	23.20	18	21.1	70.85	0	3
Whitestown	5,155	10	20.95	3	33.3	222.22	0	0
ROME	15,000	20	16 00	1	5.0	150.00	0	2
Boonville	3,500	7	23.95	2	28.5	428.57	0	1
Camden	3,400	10	35.30	3	30.0	300.00	0	1
Waterford	5,286	11	24.90	3	25.3	181.80	0	0
Ballston Spa	3,527	10	34.00	....	....	......	0	1
Saratoga Springs	12,000	22	22.00	6	27.3	318.18	1	0
Rest of district	....	196	......	48	24.0	130.00	1	9
SOUTHERN TIER DISTRICT:								
Totals	....	440	......	86	19.5	90.10	1	31
BINGHAMTON	35,000	65	22.28	19	29.2	446.15	0	9
Owego	6,000	7	14.00	....	....	......	0	0
Candor	3,674	6	19.62	1	16.7	......	0	0
Waverly	4.123	5	14.30	....	....	......	0	0
ELMIRA	30,893	40	19.00	6	12.2	367.35	0	3
Horseheads	3,500	5	17.12	1	20.0	200.00	0	1
HORNELLSVILLE	11,000	21	23.10	6	28.5	380.84	0	5

FOR OCTOBER — (*Continued*).

Malarial diseases	Small-pox.	Scarlet fever.	Measles.	Erysi elas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2	0	4
0	0	0	0	0	0	0	0	1	1	0	0	2	0	1	0	0	2	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
1	0	0	0	0	4	9	19	26	44	1	26	15	24	40	6	12	47	19
5	....	2	....	2	1	12	64	16	86	2	35	13	41	41	9	18	48	37
0	0	0	0	0	0	0	3	0	1	1	2	1	5	4	1	0	3	3
0	0	0	0	0	0	0	1	0	1	0	1	1	0	1	0	0	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0
0	0	0	0	0	0	3	3	1	4	0	1	0	2	0	0	0	1	4
0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	2	2	1
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0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	0
0	0	0	0	0	0	0	2	1	1	0	1	0	0	1	0	0	0	1
0	0	0	0	0	0	1	2	1	1	0	1	1	0	3	0	0	0	3
0	0	0	0	0	0	2	0	1	1	0	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	2	0	2	0	0	0	0	0	0	1
0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	3	0
0	0	0	0	0	0	0	1	0	3	0	4	0	0	1	1	0	6	1
4	0	2	0	2	0	5	50	11	20	1	22	10	31	27	5	14	26	20
....	....	8	5	1	2	20	34	40	63	3	46	46	34	67	16	20	45	44
0	0	1	2	1	0	1	3	6	9	1	6	3	0	5	2	1	2	4
0	0	0	0	0	0	0	2	1	0	0	2	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
0	0	4	1	0	1	2	2	2	5	0	4	2	3	3	0	1	2	4
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	3	1	0	3	0	2	2	0	0	1	2
0	0	0	0	0	0	0	2	1	2	1	0	0	2	2	2	0	1	2
0	0	0	0	0	0	0	1	2	2	0	0	0	1	1	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0
0	0	0	1	0	0	2	0	1	1	0	1	0	0	1	0	1	1	0
0	0	0	0	0	0	3	0	7	15	0	7	14	4	15	4	6	6	1
0	0	1	0	0	0	0	1	1	0	0	2	1	1	2	1	0	0	0
0	0	0	0	0	0	1	0	0	5	0	2	2	1	3	1	0	3	0
0	0	0	0	0	0	1	1	0	1	0	0	1	0	2	0	0	0	0
0	0	0	0	0	0	1	1	0	2	0	0	1	1	1	1	0	0	1
0	0	0	0	0	0	1	1	1	2	0	0	1	0	2	0	0	0	3
0	0	0	0	0	0	0	0	0	1	0	2	1	1	0	2	0	1	1
0	0	0	0	0	0	3	3	3	2	0	1	2	3	0	0	0	1	3
0	0	2	1	0	1	5	17	12	13	1	15	18	13	25	3	10	27	23
2	....	....	3	....	3	88	35	26	33	3	37	20	34	66	12	25	45	26
2	0	0	0	0	0	12	6	4	6	0	4	0	4	12	0	2	2	2
0	0	0	0	0	0	0	0	1	2	0	1	0	1	1	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	3	0
0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	2	0
0	0	0	0	0	1	12	2	0	3	1	3	5	0	13	2	0	0	4
0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1
0	0	0	0	0	1	0	2	2	0	0	2	0	1	1	0	4	2	1

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever	Typhoid fever.
SOUTHERN TIER DIST.—(*Cont'd*):								
Bath	3,261	5	18.40	1	20.0	......	0	0
CORNING	8,550	13	18.24	3	23.1	77.01	0	0
Olean	7,358	26	42.38	12	46.2	384.60	0	1
Salamanca	3,692	9	29.16	1	11.1	222.22	0	1
JAMESTOWN	16,038	17	12.50	5	29.3	411.65	0	4
Westfield	3,000	......	......	....	....	......	0	0
Fredonia	3,400	7	24.40	1	14.3	142.85	0	0
Rest of district	....	205	......	30	15.0	180.00	1	7
EAST CENTRAL DISTRICT:								
Totals	....	482	......	108	22.3	208.33	6	23
SYRACUSE	88,143	148	20.20	47	31.7	229.60	4	5
Baldwinsville	3,000	3	12.00	1	33.3	......	0	0
Cortland	8,590	16	22.32	3	18.9	312.50	0	0
Homer	3,000	6	24.00	....	....	500.00	0	2
Oneida	6,083	7	14.00	3	42.8	285.71	0	0
Hamilton	4 000	6	18.00	....	....	......	0	0
Cazenovia	4,182	9	21.65	1	11.1	......	0	0
Brookfield	3,262	4	14.56	....	....	250.00	1	0
Norwich	5,212	10	23.10	2	20.0	400.00	0	1
Oneonta	6,272	11	21.00	5	45.5	181.80	0	0
Worcester	3,000	1	4.00	....	....	......	0	0
Cooperstown	3,000	6	24.00	....	....	......	0	0
Walton	4,543	6	15.84	....	....	......	0	0
Delhi	3,000	5	20.00	1	20.0	200.00	0	0
Rest of district	....	244	......	45	18.5	198.75	1	15
WEST CENTRAL DISTRICT:								
Totals	....	349	......	58	16 6	128.60	1	11
AUBURN	25,858	34	15.79	8	23.5	117 51	0	1
ITHACA	11,079	11	12.00	....	....	......	0	0
Waterloo	4,350	6	16 50	1	16.7	166.67	0	1
Seneca Falls	6,116	7	13.72	....	....	......	0	0
Geneva	7,557	10	15.87	....	....	......	0	0
Canandaigua	5,868	5	10.22	1	20.0	......	0	0
Manchester	4.439	2	6.00	1	50.0	......	0	0
Phelps	5,086	8	19.20	2	25.0	375.00	0	1
Penn Yan	4,254	7	18.74	2	28.5	......	0	0
Batavia	7,221	1	......	....	....	......	0	0
Dansville	3,758	4	12.76	....	....	......	0	0
Le Roy	3,000	4	16.00	1	25.0	......	0	0
Rest of district	....	250	......	42	16.6	145.53	1	8
LAKE ONTARIO & WEST. DIST.:								
Totals	....	1,008	......	338	33.6	255.48	8	47
BUFFALO	255,664	451	21.17	197	43.8	308.85	7	23
Tonawanda	7,145	17	28.56	5	29.4	411.77	0	5
Amherst	4,041	5	15.00	1	20.0	......	0	0
LOCKPORT	16,038	3	......	....	....	333.33	0	1
Niagara	10,979	18	19.63	2	11.1	111.11	0	1
Medina	4,500	7	18.67	1	14.2	285.70	0	0
Albion	4,586	11	28.71	2	19.1	90.90	0	0
Brockport	3,742	......	......	....	....	......	0	0
ROCHESTER	138,327	189	16.30	54	28.4	236.84	0	6
Palmyra	4,188	9	25.71	1	11.1	......	0	0
Newark	3,000	3	12.00	....	....	......	0	0

FOR OCTOBER—(*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	1
0	0	0	0	0	0	0	1	0	1	0	3	1	2	1	0	1	1	2
0	0	0	1	0	1	0	7	2	2	0	1	0	1	4	0	1	2	3
0	0	0	0	0	0	1	0	1	2	0	1	0	1	0	0	1	0	1
0	0	0	0	0	0	3	0	3	1	0	1	1	1	0	0	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	3	1
0	0	0	2	0	0	9	17	13	14	2	17	9	20	34	10	14	27	9
8	....	....	....	....	1	18	49	28	57	2	43	26	38	55	14	21	55	48
1	0	0	0	0	1	6	17	7	27	0	14	10	8	12	4	10	5	17
0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
0	0	0	0	0	0	5	0	2	0	0	2	0	3	2	0	0	0	2
0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0	1	0
0	0	0	0	0	0	0	2	0	2	0	1	0	0	1	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	3	0	1	1	0	0	1	0
0	0	0	0	0	0	0	0	0	2	1	1	0	0	1	0	2	0	2
0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0
1	0	0	0	0	0	0	2	0	1	0	0	0	2	2	0	1	0	0
0	0	0	0	0	0	0	2	1	2	0	1	0	0	3	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0	1	0	1
0	0	0	0	0	0	0	0	0	2	0	1	0	1	0	0	0	2	0
0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	1	1
1	0	0	0	0	0	7	24	17	19	1	20	12	21	30	9	6	43	18
2	....	1	....	....	2	2	26	12	33	5	35	16	36	40	13	17	62	35
0	0	1	0	0	0	0	2	0	6	1	5	5	4	5	0	1	2	1
0	0	0	0	0	0	0	0	0	0	0	2	1	2	2	1	1	2	0
0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	3	1	0	1	2	0	0	0
0	0	0	0	0	0	0	0	0	1	1	2	0	1	2	0	0	2	1
0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	1	3	0
0	0	0	0	0	0	0	0	0	0	1	1	0	1	2	1	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
2	0	0	0	0	2	2	21	11	23	2	21	6	26	27	8	13	49	28
6	....	15	1	3	7	68	101	67	97	4	93	39	73	104	35	52	72	116
4	0	11	1	1	2	39	51	37	41	2	45	15	30	39	6	18	20	59
0	0	0	0	0	0	0	2	0	3	0	3	0	0	1	0	2	1	0
0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	0	1
0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	1	0	0	0	2	0	1	0	2	2	1	5	1	2
0	0	0	0	1	0	0	1	0	1	0	1	1	0	0	1	0	1	0
0	0	0	0	0	1	0	0	0	2	0	3	1	0	2	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	1	5	12	13	17	1	16	10	14	24	8	5	16	20
0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	4	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever	Typhoid fever.
LAKE ONTARIO & WEST. DIS.— *(Concluded)*:								
Lyons	6,000	18	36.00	3	16.7	55.55	0	1
Clyde	3,000	6	24.00	2	33.3	333.33	0	0
OSWEGO	21,842	19	10.45	7	36.8	159.45	0	1
Fulton	4,214	8	22.75	4	50.0	250.00	0	0
Richland	3,771	4	12.73	1	25.0	250.00	0	0
Rest of district	....	240	......	58	24.7	208.15	1	9
Totals for the State	....	9,718	......	3,454	35.5	200.00	47	290
Average for Oct. for past six years	....	7,705	......	2,554	33.2	180.40	27	223

REMARKS.— The total mortality in October is very nearly the same as it was in September: the
is due to the diminution in the mortality from diarrhœal diseases, which is less by half than in
deaths to 527; in October, 1890, there were 370 deaths. This is not due to widespread prevalence
5.42 per cent of the entire mortality of the State was from diphtheria, while but 2.31 occurred
occurrences have been reported. The deaths from typhoid fever are the same as last month.
has been reported the occurrence of small pox at Kingston, where two cases have developed.
been caused by an emigrant from a German steamer on which it existed. Both of these out-
deaths in September to 1,012; there is an increase in deaths from consumption and also from

FOR OCTOBER — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	1	0	2	2	0	1	4	2	3	2
0	0	0	0	0	0	0	2	0	1	0	0	0	0	2	0	0	1	0
0	0	1	0	0	0	0	1	4	1	0	1	1	1	4	0	2	1	1
0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	1	3	1
0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	0	0
2	0	3	0	0	2	4	29	10	26	1	20	9	24	25	13	12	24	26
70	....	118	36	14	54	527	794	1,012	1,124	60	882	558	695	1,023	259	430	494	1281
92	3	70	36	10	86	460	361	922	1,004	65	554	430	532	826	222	331	496	977

number of deaths in infancy is less, and also the number of deaths from zymotic diseases. This
September. On the other hand, there has been an increase in that from diphtheria, from 334
of the disease, deaths being reported from but twenty-one localities not specified in the Bulletin;
in rural towns, showing the increase to be in the cities and large villages No new epidemic
and there is no increase in other contagious and infectious diseases. During November there
having probably been contracted in Vermont, and also in the town of Seneca several cases have
breaks are thought to be under control. Acute respiratory diseases show an increase from 720
diseases of the circulatory system.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPITALS, villages in *italics* and towns in Roman

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	....	5,151	......	1,755	34.1	150.45	18	83
NEW YORK CITY	1,680,796	3,020	21.86	1,038	51.0	150.45	11	51
BROOKLYN	862 155	1,482	20.91	528	35.6	154.52	5	24
Gravesend*	6,937	7	12.11	4	57.7	285.71	0	0
New Utrecht	8,854	13	17.62	5	38.5	307.70	1	0
Flatbush	12,338	20	19.40	7	35.0	300.00	0	0
LONG ISLAND CITY	30,506	61	21.00	18	29.5	65.57	0	0
Newtown	17 549	34	21.87	10	31.2	125.00	0	2
Oyster Bay	13,870	10	......	2	20.0	......	0	0
Hempstead	23,756	14	......	1	7.1	......	0	0
North Hempstead	8,134	9	13.28	5	55.5	111.11	0	0
Jamaica	14,441	14	......	7	50.0	214.28	0	1
Flushing	19,803	36	21.80	10	27.7	150.00	0	0
Southold	7,705	7	11.00	2	28.5	428.57	0	0
Sag Harbor	3,000	2	8.00	1	50.0	......	0	0
Huntington*	8,277	12	17.40	3	25.0	83.33	0	0
New Brighton	16,423	31	22.66	13	41.8	290.32	0	0
Edgewater	14,265	32	26.85	10	31.2	187.50	0	0
Port Richmond	6,290	6	12.00	1	16.7	......	0	0
Westfield	8,258	7	......	2	28.5	......	0	0
YONKERS	32,033	49	18.32	15	30.3	144.90	0	1
Westchester	10,029	10	12.00	4	40.0	100.00	1	0
Mount Vernon	10,830	24	26.60	7	29.1	166.67	0	0
Port Chester	5,274	8	17.20	....	....	125.00	0	0
Sing Sing	9,352	21	26.84	8	38.1	619.18	0	0
New Rochelle	8,217	10	14.50	6	60.0	......	0	0
Peekskill	9,676	12	15.00	3	25.0	166.67	0	0
Rest of district	....	200	......	43	21.5	75.00	0	4
HUDSON VALLEY DISTRICT:								
Totals	....	910	......	225	24.6	172.52	5	20
ALBANY	100,000	196	23.52	52	26.4	121.42	1	3
COHOES	22,509	42	22.38	14	33.3	71.43	0	1
TROY	60,956	123	24.26	36	29 2	187.00	2	9
West Troy	13,000	19	17.54	4	21.0	315.75	0	0
Green Island	4,463	6	16.20	....	....	166.67	0	0
Lansingburgh	10 550	23	26.16	4	14.4	130.43	0	3
Hoosick Falls	7,014	12	20.57	6	50.0	333.33	0	0
Greenbush	7,301	15	24.66	10	33.3	400 00	0	1
Coxsackie	4,000	4	12.00	....	....	250.00	0	1
Catskill	4,920	4	10 00	1	25.0	......	0	0
HUDSON	10,000	8	9.60	1	12.5	125.00	0	0
KINGSTON	21,261	29	16.53	7	24.0	300.00	2	0
Ellenville	3,000	......	......	....	....	......	0	0
Marbletown	3,639	2	6.60	....	....	......	0	0
Esopus	4,659	9	22.77	2	22.2	111.11	0	0
Saugerties	4,237	5	14.15	1	20.0	......	0	0
POUGHKEEPSIE	22,206	29	15.80	3	10.5	......	0	0
Fishkill	11,840	5	......	....	....	......	0	0
Wappinger Falls	3,718	7	22.57	....	....	......	0	0
NEWBURGH	23,087	51	26.60	18	35.3	58.91	0	0
Port Jervis	9,327	11	14.15	1	9.0	272.72	0	1
Middletown	11,977	29	29.00	9	31.2	400.00	0	2
Goshen	5,021	4	9.60	....	....	......	0	0

YORK STATE BOARD OF HEALTH.

districts, cities and towns, during November, 1891.

type. For boundaries of *Sanitary Districts*, see Annual Summary.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
35	....	127	19	18	18	356	101	1,042	655	38	300	321	341	508	109	214	112	736
13	0	73	14	8	13	209	63	625	407	24	158	191	195	251	59	135	39	481
17	0	87	2	8	3	112	21	326	167	9	105	93	91	172	30	43	28	180
0	0	0	0	0	0	0	2	2	0	0	0	0	1	1	0	1	0	0
0	0	2	0	0	0	1	0	1	1	0	1	1	0	2	0	2	1	0
0	0	0	0	0	0	4	2	1	2	0	3	0	1	2	0	1	2	2
0	0	0	0	1	1	0	2	15	8	0	1	3	4	4	0	8	5	9
0	0	0	0	0	0	2	0	10	2	0	3	3	3	8	0	0	4	2
0	0	0	0	0	0	0	0	1	1	0	0	2	1	2	0	0	2	1
0	0	0	0	0	0	0	0	1	0	1	2	2	0	2	1	1	2	2
0	0	0	0	0	0	1	0	2	1	0	1	0	2	2	0	0	0	0
0	0	0	0	0	0	2	0	2	0	0	1	0	3	2	0	1	0	2
0	0	0	0	0	0	4	1	7	3	0	0	2	8	5	0	2	1	3
0	0	3	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
0	0	1	0	0	0	0	0	1	2	0	1	0	1	1	1	1	1	2
0	0	6	0	0	0	8	0	3	5	0	1	0	3	4	1	1	2	2
2	0	3	0	1	0	0	0	8	3	0	2	1	1	5	0	0	1	5
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	1
0	0	0	0	0	0	0	0	1	1	0	0	2	0	3	0	0	0	0
2	0	0	0	0	0	2	2	6	10	1	1	3	3	10	1	5	2	0
0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	1	0	3
0	0	1	0	0	0	3	0	2	4	1	1	3	0	0	2	3	0	4
0	0	0	0	0	0	1	0	1	1	0	3	1	1	0	0	0	0	0
0	0	0	3	0	0	9	1	0	1	0	0	0	1	1	0	0	1	4
0	0	0	0	0	0	0	0	1	1	0	0	0	1	3	0	0	0	4
0	0	0	0	0	1	1	0	1	1	0	0	0	3	1	0	2	1	1
1	0	1	0	0	0	2	7	20	32	2	15	13	17	32	4	6	17	27
4	....	17	5	....	3	60	14	153	99	6	58	46	86	104	33	45	58	75
0	0	11	3	0	3	11	4	40	23	1	12	5	20	26	5	7	8	13
0	0	0	0	0	0	2	0	8	5	0	4	3	2	5	2	0	4	6
0	0	1	2	0	0	6	3	29	12	1	9	6	8	11	3	5	3	13
0	0	0	0	0	0	6	0	5	2	0	1	0	4	0	0	0	0	1
0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	2	0	0	0
0	0	0	0	0	0	0	0	2	3	0	1	1	3	4	0	2	3	1
0	0	1	0	0	0	2	1	1	2	0	1	1	0	1	0	0	1	1
0	0	0	0	0	0	5	0	3	0	0	0	0	2	2	0	1	0	1
0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0
0	0	0	0	0	0	1	0	2	0	0	0	1	0	1	1	2	0	0
2	0	0	0	0	0	4	1	5	2	0	2	1	5	2	0	0	3	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	1	0	1	1	0	0	1	1	3	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	0	0	1
0	0	0	0	0	0	0	0	3	6	0	2	2	7	1	0	2	4	2
0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	1	1	0	2	1	0	2	0	0	0	0
0	0	0	0	0	0	3	0	9	4	1	4	3	5	9	0	2	3	8
0	0	0	0	0	0	2	0	1	1	2	0	0	1	0	0	3	0	0
0	0	1	0	0	0	9	0	1	0	0	1	2	0	6	1	3	2	1
0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	1	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VALLEY DIST.—(*Con.*):								
Haverstraw	9,079	7	......	2	28.5	......	0	0
Nyack	5,603	5	11.20	1	20.0	200.00	0	0
Ramapo	5,910	12	24.40	5	41.7	166.67	0	0
Rest of district	....	253	......	48	14.0	127.80	0	9
ADIRONDACK & NORTH'N DIST.:								
Totals	....	301	......	47	15.7	130.00	1	12
WATERTOWN	14,725	17	13.85	2	11.7	......	0	0
Ellisburgh	4,145	10	......	1	10.0	......	0	0
Cape Vincent	3,014	4	16.00	....	....	......	0	0
Clayton	4,411	2	......	....	....	......	0	0
OGDENSBURGH	11,662	21	21.63	6	28.6	333.33	0	1
Potsdam	4,000	5	15.00	....	....	......	0	0
Malone	5,000	10	24.00	1	10.0	......	0	0
Plattsburgh	7,000	9	15.44	1	12.5	......	0	0
Glens Falls	9,509	10	12.65	1	10.0	......	0	0
Whitehall	4,434	2	......	....	....	......	0	0
Fort-Edward	4,424	11	29.83	2	19.1	272.73	0	1
Fort Ann	2,700	2	9.50	....	....	......	0	0
Argyle	2,313	5	26.00	1	20.0	......	0	0
Salem	3.127	......	......	....	....	......	0	0
Greenwich	4,196	5	14 30	1	25.0	500.00	0	2
Rest of district	....	188	......	31	16.5	142.12	1	8
MOHAWK VALLEY DISTRICT:								
Totals	....	470	......	87	23.5	186.50	3	21
SCHENECTADY	20,000	39	23.40	12	32 5	2.5 30	0	8
Schoharie	3,000	1	4.00	13	....	......	0	0
Cobleskill	3,443	4	14.00	1	25.0	......	0	0
AMSTERDAM	17,336	37	25.71	12	83.0	243.24	0	0
Fort Plain	3,000	8	12.00	....	....	333.33	0	1
Johnstown	7,768	4	......	1	25.0	500.00	0	2
GLOVERSVILLE	13,864	14	12.18	5	35.7	214.28	0	1
Little Falls	8,783	13	17.76	2	15.4	153.76	0	2
Herkimer	3,000	2	8.00	....	....	......	0	0
Ilion	4,057	10	29.42	1	10.0	300.00	0	0
UTICA	44,007	76	20.75	22	28.8	144 75	0	2
Whitestown	5,155	......	......	....	....	......	0	0
ROME	15,000	27	21.60	2	7.3	34.33	0	1
Boonville	3,509	......	......	....	....	......	0	0
Camden	3,400	4	14.12	....	....	......	0	0
Waterford	5,286	......	......	....	....	......	0	0
Ballston Spa	3,427	9	30.60	2	22.2	333.33	0	0
Saratoga Springs	12,000	17	17.00	3	17.8	225.30	0	0
Rest of district	....	210	......	22	12.7	132.85	3	9
SOUTHERN TIER DISTRICT:								
Totals	....	318	......	59	18.7	181.25	2	14
BINGHAMTON	35,000	59	20.23	9	15.3	233.56	0	2
Owego	6,000	7	14.00	....	....	142.85	0	1
Candor	3,674	2	6.54	....	....	......	0	0
Waverly	4,123	4	12.00	....	....	......	0	0
ELMIRA	30,893	46	17.85	14	30.4	326.10	0	5
Horseheads	3,500	2	7.00	1	50.0	......	0	0
HORNELLSVILLE	11,000	13	14.18	3	23.1	461 51	1	2
Bath	3,261	3	12.50	1	33.3	......	0	0

FOR NOVEMBER — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	3
0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1
0	0	0	0	0	0	2	0	1	0	0	0	0	2	2	0	1	3	1
2	0	2	0	0	0	14	5	37	32	1	15	17	20	24	19	13	23	20
3	....	....	1	....	2	17	8	36	31	2	30	15	26	39	6	11	39	27
0	0	0	0	0	0	0	0	1	5	0	1	1	2	1	1	1	3	1
0	0	0	0	0	0	0	0	1	0	0	0	0	1	3	0	0	3	2
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	5	1	0	1	0	1	3	0	5	0	0	0	4
0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	2	0
0	0	0	0	0	0	0	0	1	3	0	0	0	1	1	0	2	1	1
0	0	0	0	0	0	0	0	1	2	0	2	0	1	1	0	0	2	0
0	0	0	0	0	0	0	0	2	3	0	0	0	2	1	0	0	2	0
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	2	0	0	1	2	0	1	0	1	1	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0
3	0	0	1	0	0	12	2	27	14	2	21	9	16	25	4	8	20	15
1	....	6	5	1	1	32	2	68	46	2	42	20	49	60	15	23	48	25
0	0	0	4	0	0	2	0	4	3	0	6	0	4	8	0	1	1	3
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	1	0
0	0	4	0	0	0	2	1	9	1	0	4	2	6	2	0	2	2	2
0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	2	0	2	0	0	0	1	3	1	0	0	2	2
0	0	0	0	0	0	0	0	2	1	0	1	2	0	3	0	1	1	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
0	0	0	0	0	0	3	0	1	0	0	1	0	2	1	1	0	1	0
0	0	1	0	0	0	8	0	16	12	0	2	2	6	16	0	3	6	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	6	4	1	5	1	2	0	3	0	3	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	6	0	0	3	0	0	0	0	0	0	3	0	0	0	2	1
0	0	0	0	0	0	4	0	2	1	0	1	3	0	3	1	1	0	1
1	0	1	1	1	1	7	1	24	21	2	21	9	23	23	8	15	29	11
2	....	4	....	2	1	26	4	33	23	5	18	16	37	41	14	19	34	22
0	0	0	0	0	0	12	0	6	6	1	4	1	5	10	3	3	6	0
0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0
2	0	1	0	0	0	9	0	5	2	0	0	4	3	6	2	2	3	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
1	0	2	0	0	0	0	0	2	0	0	0	0	1	0	0	2	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
LAKE ONTARIO & WEST. DIST.—(*Concluded*):								
Clyde	3,000	3	12.00	......	......	......	0	0
OSWEGO	21,842	15	8.25	2	13.3	133.33	0	1
Fulton	4,214	1	......	......	......	......	0	0
Richland	3,771	10	31.83	4	40.0	100.00	0	0
Rest of district	....	200	......	32	16.0	118.75	1	12
Totals for the State	....	8,727	......	2,528	29.0	151.05	39	241
Average for Nov. for past six years	....	7,243	......	2,135	29.5	173.68	28	178

REMARKS.— The reported mortality for November is the lowest of any month of the year, uniformly the healthiest month of the year in this State, showing for the past six years an entire period, which is about 300. There were 1,000 more deaths than in November, 1890, but as reports and natural increase in population; the proportion of deaths from zymotic diseases is deaths from diphtheria, a small increase over October. Of these only forty four occurred in mortality, the most of the deaths being reported from cities and villages. Of 241 deaths from mortality, about double the proportion of the rest of the State During the month two deaths All others affected have recovered and the outbreak there is at an end. The number of deaths the cause of death of seventeen per cent of the entire mortality. Epidemic influenza is the December Bulletin.

FOR NOVEMBER — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0
0	0	1	0	0	0	0	0	1	4	0	1	1	1	1	1	0	0	3
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	3	0	0	2	0	1	2	0	0	0	1
3	0	3	0	0	2	0	3	25	19	1	19	6	17	27	10	9	26	17
61	2	179	31	26	31	567	143	1,507	1,017	65	583	501	656	967	237	404	437	1033
71	2	101	68	19	58	510	124	1,103	953	70	446	407	523	777	191	336	497	816

being a daily average of 291, that of the preceding ten months being 338. November is
average daily mortality that is less by twenty-five deaths per day than the daily average for the
the increase is distributed pretty uniformly in all classes of causes it appears to be from fuller
a little larger, the increase being in diphtheria, scarlet fever and typhoid fever. There were 567
the small rural towns, not specified in the Bulletin, less than three per cent of the entire
typhoid fever, sixty-two occurred in small rural localities, or four per cent of their total
occurred from small pox in the town of Seneca, and early in December another death occurred.
from acute respiratory diseases is one-third greater than in the month preceding, and constitute
reported cause of a limited number of deaths; its greater prevalence will be shown in the

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPITALS, villages in *italics* and towns in Roman

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	....	6,396	......	2,060	32.2	138.75	16	49
NEW YORK CITY	1,680,796	3,734	26.16	1,279	34.2	132.30	11	29
BROOKLYN	862,155	1,855	25.38	594	32.0	137.40	2	16
Gravesend	6,947	8	13.84	5	62.5	......	0	0
New Utrecht	8,854	20	27.10	8	40.0	250.00	1	0
Flatbush	12,338	17	16.50	6	32.2	60.00	0	0
LONG ISLAND CITY	30,506	61	24.00	16	26.2	115.25	1	0
Newtown	17,549	35	23.93	12	34.2	171.43	0	2
Oyster Bay	13,870	16	......	3	18.1	125.00	0	0
Hempstead	23,756	12	......	3	25.0	166.67	0	0
North Hempstead	8,134	11	16.22	4	36.4	90.91	1	0
Jamaica	14,441	33	27.42	12	36.4	60.60	0	0
Flushing	19,803	35	19.39	10	28.1	156.25	0	0
Southold	7,705	10	15.60	3	30.0	300.00	0	0
Sag Harbor	3,000	4	16.00	1	25.0	500.00	0	0
Huntington	8,277	15	21.75	3	20.0	......	0	0
New Brighton	16,423	34	24.86	3	8.8	29.30	0	0
Edgewater	14,265	36	30.24	7	19.2	166.67	0	0
Port Richmond	6,290	6	11.42	1	16.7	......	0	0
Westfield	8,258	12	20.50	1	8.5	84.16	0	0
YONKERS	32,033	65	24.25	14	21.5	138.45	0	2
Westchester	10,029	15	18.00	3	20.0	......	0	0
Mount Vernon	10,830	31	34.34	8	25.8	225.80	0	0
Port Chester	5,274	13	27.95	2	15.4	77.20	0	0
Sing Sing	9,352	26	33.35	10	38.4	315.38	0	0
New Rochelle	8,217	20	29.00	8	40.0	50.00	0	0
Peekskill	9,676	17	21.08	3	17.6	......	0	0
Rest of district	....	255	......	41	15.6	78.40	0	0
HUDSON VALLEY DISTRICT:								
Totals	....	1,179	......	301	25.5	149.00	5	37
ALBANY	100,000	233	27.96	77	33.0	244.63	1	9
COHOES	22,509	73	38.91	32	43.8	232.78	0	3
TROY	60,956	110	21.61	26	23.6	154.54	0	4
West Troy	13,000	31	28.61	8	26.0	132.45	0	0
Green Island	4,463	4	11.00	1	25.0	250.00	0	0
Lansingburgh	10,550	24	27.72	8	33.3	83.33	0	0
Hoosick Falls	7,014	1	......	....	....	......	0	0
Greenbush	7,301	18	29.59	8	44.4	277.77	1	1
Coxsackie	4,000	7	21.00	2	28.7	......	0	0
Catskill	4,920	8	19.44	2	25.0	125.00	0	1
HUDSON	10,000	28	33.60	6	21.4	35.70	0	1
KINGSTON	21,261	36	20.52	13	36.1	111.11	2	0
Ellenville	3,000	1	......	1	....	......	0	0
Marbletown	8,639	1	......	....	....	......	0	0
Esopus	4,659	5	......	2	40.0	......	0	0
Saugerties	4,237	3	......	1	23.3	333.33	0	0
POUGHKEEPSIE	22,206	54	29.47	7	13.0	129.85	0	3
Fishkill	3,617	14	......	....	....	70.43	0	0
Wappinger Falls	3,718	5	16.12	1	20.0	400.00	0	1
NEWBURGH	23,087	71	36.63	18	25.2	85.38	0	3
Port Jervis	9,327	24	30.88	7	29.2	166.67	0	1
MIDDLETOWN	11,977	29	29.23	6	21.5	182.75	0	1
Goshen	5,021	6	14.50	1	16.7	......	0	0

YORK STATE BOARD OF HEALTH.

districts, cities and towns, during December, 1891.

type. For boundaries of *Sanitary Districts*, see Annual Summary.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhoeal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhoeal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
32	....	195	59	24	24	410	80	1,634	690	67	328	397	401	621	159	224	174	812
8	0	125	45	19	17	236	54	870	435	40	180	240	216	290	98	136	63	622
15	0	46	9	4	4	138	21	565	174	18	95	118	118	232	39	55	56	130
0	0	0	0	0	0	0	0	3	1	0	0	0	0	1	0	0	0	3
0	0	2	0	0	0	2	0	5	1	1	1	0	1	2	0	0	2	2
1	0	0	0	0	0	0	0	4	1	1	2	3	1	3	0	0	0	1
4	0	0	0	0	0	1	1	22	2	0	4	3	6	7	0	4	[illegible]	5
0	0	0	0	0	0	4	0	9	7	0	1	2	3	1	0	1	[illegible]	4
0	0	0	0	0	0	2	0	4	2	0	2	2	0	0	0	2	2	0
0	0	1	0	0	0	1	0	1	3	0	1	1	1	0	0	1	[illegible]	1
0	0	0	0	0	0	0	0	2	1	0	0	1	2	0	0	2	[illegible]	1
0	0	0	0	0	0	2	0	8	2	1	3	1	2	5	3	1	[illegible]	4
1	0	2	0	0	0	3	0	9	1	1	5	1	4	2	1	0	2	3
0	0	1	0	0	2	0	0	2	0	0	1	0	2	1	0	0	1	0
0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	1	1	0	3	1	2	3	1	1	[illegible]	1
0	0	1	0	0	0	0	0	10	4	1	1	1	5	4	1	2	2	2
0	0	3	0	0	0	3	0	11	3	0	3	3	2	4	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	2	1
0	0	1	0	0	0	0	0	6	1	1	0	1	1	0	0	0	[illegible]	0
2	0	1	0	0	0	4	0	21	6	1	1	3	3	7	1	2	[illegible]	5
0	0	0	0	0	0	0	0	4	4	0	1	1	1	3	0	0	0	1
0	0	6	0	0	0	1	0	8	3	0	2	1	2	2	1	2	2	1
0	0	0	0	0	0	1	0	3	1	0	1	2	1	1	0	1	1	1
0	0	0	5	0	0	3	0	5	5	0	1	2	1	2	2	0	0	0
1	0	0	0	0	0	0	0	7	0	0	0	2	1	4	2	0	1	2
0	0	0	0	0	0	0	0	5	1	0	0	1	2	3	0	0	2	3
0	0	6	0	1	1	8	4	48	31	2	20	8	22	42	10	14	22	16
6	....	21	11	....	7	77	12	244	98	3	78	60	106	159	32	48	87	88
0	0	9	7	0	1	21	9	40	25	1	13	8	15	33	9	8	5	19
0	0	1	0	0	2	9	2	13	6	0	6	1	5	7	1	2	4	11
0	0	3	3	0	0	7	0	23	11	0	8	5	11	13	1	1	6	14
0	0	1	0	0	0	3	0	3	6	0	1	2	4	6	0	3	1	1
0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	1	0
0	0	0	0	0	1	1	0	5	2	0	2	2	2	1	1	2	3	2
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	2	0	3	0	0	3	0	2	2	1	0	1	1
0	0	0	0	0	0	0	0	3	1	0	0	0	1	1	0	0	1	0
0	0	0	0	0	0	0	0	1	1	0	1	0	1	2	0	0	1	0
0	0	0	0	0	0	0	0	13	0	0	2	2	0	5	1	0	4	0
2	0	0	0	0	0	0	0	8	3	1	5	0	7	3	1	1	2	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	[illegible]	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	[illegible]	0
0	0	0	0	0	1	3	0	8	4	0	7	8	5	8	1	1	7	3
1	0	0	0	0	0	0	0	5	3	0	0	1	0	[illegible]	0	2	[illegible]	0
0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	2	1	33	7	0	0	3	4	[illegible]	1	1	[illegible]	3
0	0	0	0	0	0	3	0	3	1	0	4	2	4	[illegible]	0	4	[illegible]	0
0	0	0	0	0	0	4	0	5	3	0	1	2	0	6	0	1	[illegible]	2
0	0	0	0	0	0	0	0	1	0	0	1	0	2	1	0	0	[illegible]	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VALLEY DIST.—(*Con.*)								
Haverstraw	9,079	21	27.80	6	28.5	......	0	0
Nyack	5,603	7	15.00	1	14.3	142.85	0	0
Ramapo	5,910	11	22.57	4	37.4	90.90	0	0
Rest of district	....	354	......	63	17.8	111.10	1	9
ADIRONDACK & NORTH'N DIST.:								
Totals	....	441	......	75	17.0	106.85	3	16
WATERTOWN	14,725	40	32.56	10	25.0	50.00	0	1
Ellisburgh	4 145	11	31.57	3	25.3	90.90	0	0
Cape Vincent	3,014	3	12.00	1	33.3	......	0	0
Clayton	4,411	3	......	....	....	333.33	0	1
OGDENSBURGH	11,662	21	20.70	3	14.3	95.14	0	0
Potsdam	4,000	11	33.83	4	36.4	454.54	0	4
Malone	5,000	11	26.40	2	27.3	......	0	0
Plattsburgh	7,000	13	20.57	2	16.7	333.33	0	1
Crown Point	3,135	1	......	....	....	......	0	0
Glens Falls	9,509	6	......	3	50.0	166.67	0	0
Whitehall	4,434	7	18.94	1	14.3	142.85	0	0
Fort Edward	4,424	9	24.40	2	22.2	......	0	0
Fort Ann	2,700	4	17.78	1	25.0	......	0	0
Salem	3,127	8	22.72	....	....	250.00	0	2
Greenwich	4,196	8	22.86	1	12.5	125.00	0	0
Rest of district	....	285	......	42	14.3	100.00	3	7
MOHAWK VALLEY DISTRICT:								
Totals	....	591	......	104	17.5	130.50	....	15
SCHENECTADY	23,000	52	27.13	13	25.0	192.30	0	3
Schoharie	2,944	1	......	....	....	......	0	0
Cobleskill	3,443	11	38.28	1	9.0	......	0	0
AMSTERDAM	17,336	48	33.36	8	16.7	354.18	0	1
Fort Plain	3,000	2	8.00	....	....	......	0	0
Johnstown	7,768	16	24.74	5	31.2	125.00	0	0
GLOVERSVILLE	13,864	28	24.36	4	14.3	107.13	0	0
Little Falls	8,783	17	23.22	2	11.7	176.68	0	0
Herkimer	3,000	8	32.00	2	25.0	......	0	0
UTICA	44,007	88	24.02	24	27.3	91.00	0	1
Whitestown	5,155	10	23.30	2	20.0	100.00	0	1
ROME	15,000	24	19.20	4	16.7	83.50	0	0
Boonville	3,509	5	17.15	....	....	......	0	0
Camden	3,400	3	11.00	....	....	......	0	0
Waterford	5,286	11	24.96	3	25.2	......	0	0
Ballston Spa	3,527	6	20.40	2	33.3	......	0	0
Saratoga Springs	12,000	38	38.00	6	15.7	210.50	0	0
Rest of district	....	273	......	28	12.5	106.85	0	9
SOUTHERN TIER DISTRICT:								
Totals	....	468	......	73	15.5	145.00	1	11
BINGHAMTON	35,000	94	32.23	18	19.2	212.78	0	2
Owego	6,000	13	26.00	3	23.1	......	0	0
Candor	3,674	7	22.89	....	....	......	0	0
Waverly	4,123	4	14.72	....	....	......	0	0
ELMIRA	30,893	54	20.95	14	26.0	251.85	0	0
Horseheads	3,500	1	......	....	....	......	0	0
HORNELLSVILLE	11,000	11	12.00	3	27.3	171.72	0	0
Bath	3,261	6	......	....	....	......	0	0

FOR DECEMBER — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	3	2	0	1	0	1	1	1	7	1	4
1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	1	0
0	0	0	0	0	0	1	0	4	0	0	2	0	1	1	0	0	0	2
1	0	6	1	0	2	19	0	63	22	1	20	28	40	52	13	13	38	25
2	....	....	....	4	1	16	5	96	44	4	38	11	33	51	12	17	68	20
0	0	0	0	0	0	1	0	12	2	0	2	0	3	6	0	0	6	7
0	0	0	0	0	0	0	1	2	2	0	0	1	1	2	0	0	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	1	1	4	1	1	1	1	2	2	0	0	3	4
0	0	0	0	0	0	1	0	4	1	0	0	0	6	0	0	0	0	1
0	0	0	0	0	0	0	0	3	2	0	0	0	1	3	0	1	1	0
0	0	0	0	0	0	2	0	3	1	0	0	0	2	1	1	0	0	2
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0	0	0	2
0	0	0	0	0	0	1	0	0	0	0	0	0	2	2	1	1	0	0
0	0	0	0	0	0	0	0	2	0	1	1	0	0	1	1	0	2	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2
0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1	0	2	0
0	0	0	0	0	0	0	1	0	1	0	0	0	3	1	0	0	1	1
2	0	0	0	4	0	10	2	62	31	2	34	8	18	30	8	15	49	0
....	....	13	4	....	2	39	4	129	58	....	31	20	50	56	17	24	79	42
0	0	0	2	0	0	3	2	11	5	0	4	1	3	9	0	2	5	2
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	1	0	3	2	1	0	1	1
0	0	7	0	0	0	9	0	9	2	3	1	1	6	1	0	5	1	2
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
0	0	2	0	0	0	0	0	5	0	0	2	1	2	1	0	1	1	1
0	0	0	0	0	0	3	0	8	7	1	0	1	3	3	0	0	2	0
0	0	1	0	0	0	2	0	7	1	0	0	2	1	0	1	1	1	0
0	0	0	0	0	0	0	0	1	3	0	0	0	0	1	0	2	0	1
0	0	0	0	0	0	7	0	29	7	0	4	3	5	14	2	2	7	7
0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	5	1
0	0	0	0	0	0	2	0	6	2	0	2	0	1	0	2	0	8	1
0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	2	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	2	3	0	0	0	0	1	4
0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	2
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0	0	3	2	0	0	8	1	40	19	4	12	7	24	24	8	9	40	13
....	....	3	....	....	....	51	2	123	35	4	28	16	35	50	12	17	51	29
0	0	0	0	0	0	18	0	35	6	2	6	0	5	12	2	1	5	0
0	0	0	0	0	0	0	0	3	1	1	1	0	1	1	0	0	3	2
0	0	0	0	0	0	0	0	1	1	0	0	0	1	2	0	0	2	0
0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1
0	0	0	0	0	0	19	0	8	6	0	4	1	1	4	0	4	3	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	2	0	0	0	0	0	4	0	0	0	1	0	1	1	1	0	1
0	0	0	0	0	0	0	0	2	2	0	0	0	0	2	0	0	0	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
SOUTHERN TIER DIST.—(*Con.*):								
Corning	8,550	......	......	....	....	......	0	0
Olean	7,358	9	14.67	1	11.1	......	0	0
Salamanca	3,692	7	22.68	4	57.1	714.28	0	0
Jamestown	16,038	20	15.00	3	15.0	50.00	0	0
Westfield	3,000	1	4.00	....	....	......	0	0
Fredonia	3,400	6	21,18	....	....	......	0	0
Rest of district	....	235	......	2	11.0	82.65	1	9
EAST CENTRAL DISTRICT:								
Totals	....	580	......	70	12.1	72.42	....	12
Syracuse	88,143	164	22.38	27	16.4	85.36	0	4
Baldwinsville	3,000	7	28.00	....	....	......	0	0
Cortland	8,590	32	44.64	7	21.9	281.25	0	0
Homer	3,000	5	20.00	2	40.0	200.00	0	0
Hamilton	4,000	13	39.00	2	15.4	......	0	0
Cazenovia	4,182	13	37.14	....	....	......	0	0
Brookfield	3,262	5	18.20	....	....	......	0	0
Norwich	5,211	15	34.00	3	20.0	133.33	0	0
Oneonta	6,272	7	13.40	1	14.3	142.85	0	0
Cooperstown	3,000	4	16.00	2	50.0	......	0	0
Walton	4,543	11	29.00	....	....	......	0	0
Delhi	3,000	7	28.00	1	14.3	142.85	0	1
Rest of district	....	297	......	25	8.6	48.35	0	7
WEST CENTRAL DISTRICT:								
Totals	....	418	......	35	8.5	56.25	4	12
Auburn	25,858	65	30.16	7	10.8	92.31	1	1
Ithaca	11,079	19	20.72	2	10.5	......	0	0
Waterloo	4,350	13	35.88	1	7.7	76.90	0	1
Seneca Falls	6,116	12	23.52	2	16.7	166.67	0	0
Geneva	7,557	11	17.45	1	9.0	90.90	1	0
Canandaigua	5,868	12	24.50	2	16.7	84.50	0	0
Manchester	4,439	5	13.54	1	20.0	......	0	0
Phelps	5,086	9	21.60	2	22.2	......	0	0
Penn Yan	4,254	13	36.66	....	....	......	0	0
Batavia	7,221	9	15.00	....	....	222.22	0	2
Dansville	3,758	6	19.14	....	....	......	0	0
Le Roy	3,000	5	20 00	2	40.0	400.00	0	0
Rest of district	....	239	......	15	6.2	58.33	2	8
LAKE ONTARIO & WEST. DIST.:								
Totals	....	1,168	......	305	26.0	147.00	3	31
Buffalo	255,664	422	19.60	176	41.7	225.12	3	10
Tonawanda	7,145	8	13.44		25.0	375.00	0	2
Amherst	4,041	4	12.00	....	....	......	0	1
Lockport	16,038	15	......	....	....	133.33	0	2
Niagara	10,979	25	27.28	5	20.0	160.00	0	3
Medina	4,500	10	26.66	4	40.0	......	0	0
Albion	4,586	6	15.66	4	66.7	......	0	0
Brockport	3.742	4	13.00	....	....	......	0	0
Rochester	138,327	302	26.12	72	24.0	165.80	0	9
Palmyra	4,188	13	37.14	....	....	77.00	0	1
Newark	3,000	8	32.00	1	12.5	......	0	0
Lyons	6,000	15	30.00	1	6.7	133.33	0	1
Clyde	3,000	7	28.00	....	....	......	0	0

FOR DECEMBER — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	3	0	0	0	1	2	1	0	0	2	0
0	0	0	0	0	0	5	0	1	0	0	0	0	0	1	0	0	0	0
0	0	1	0	0	0	0	0	10	2	0	1	2	0	0	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	2	0
0	0	0	0	0	0	9	2	55	16	1	15	10	24	25	8	11	30	19
2	....	1	1	1	....	23	2	147	50	4	45	24	55	55	15	17	95	31
1	0	0	0	0	0	7	2	48	18	1	13	3	13	22	4	1	15	12
0	0	0	0	0	0	0	0	2	0	0	0	1	0	1	1	0	1	1
0	0	0	0	0	0	9	0	9	3	0	1	1	1	5	0	0	2	1
0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	1	0	1	0
0	0	0	0	0	0	0	0	4	0	1	1	0	1	0	0	1	5	0
0	0	0	0	0	0	0	0	2	3	0	0	0	1	1	0	0	6	0
0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	1	0
0	0	0	0	0	0	2	0	5	1	0	2	1	0	0	0	1	1	2
0	0	0	1	0	0	0	0	1	0	0	1	2	0	0	1	0	1	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	5	2	0	1	1	1	1	0	0	0	0
0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	2	0
1	0	1	0	1	0	4	0	65	22	2	25	15	34	24	8	14	60	14
1	....	....	....	2	3	6	1	74	20	2	26	24	47	61	19	17	65	24
0	0	0	0	0	0	4	0	20	8	1	5	1	3	6	2	3	6	4
0	0	0	0	0	0	0	0	2	2	0	1	1	1	3	1	4	1	3
0	0	0	0	0	0	0	0	3	0	0	0	0	2	2	1	0	4	0
0	0	0	0	0	2	0	0	3	2	0	0	0	0	2	0	0	3	0
0	0	0	0	0	0	0	0	1	4	0	1	0	1	1	0	1	1	0
0	0	0	0	0	0	1	0	2	0	0	0	0	2	2	0	2	2	1
0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	2	0
0	0	0	0	0	0	0	0	1	0	0	1	0	3	3	0	0	1	0
0	0	0	0	0	0	0	0	4	1	0	1	2	0	0	0	1	3	1
0	0	0	0	0	0	0	0	2	0	0	1	0	1	1	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	1	0
1	0	0	0	0	0	1	0	1	1	0	0	0	0	1	0	0	0	0
0	0	0	0	2	1	0	1	35	12	1	16	17	31	38	15	6	41	13
4	....	13	3	2	4	108	9	284	85	8	72	41	74	130	30	52	113	107
2	0	9	3	0	1	64	3	62	36	5	26	15	18	52	11	23	14	65
0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	2
0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	3	1	0	0	1	1	0	0	0	4	3
0	0	1	0	0	0	0	0	8	1	0	3	1	1	3	0	3	1	0
0	0	0	0	0	0	0	0	1	3	0	0	0	0	3	0	1	1	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	4
0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0
2	0	0	0	2	0	31	6	103	20	2	13	12	22	35	8	7	20	10
0	0	0	0	0	0	0	0	3	0	0	2	0	1	1	0	1	4	0
0	0	0	0	0	0	0	0	4	2	0	0	0	0	2	0	0	0	0
0	0	0	0	0	1	0	0	7	0	0	0	0	1	3	0	0	2	0
0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	2	1	1

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
LAKE ONTARIO & WEST. DIST.—(*Concluded*):								
OSWEGO	21,842	41	22.55	5	12.2	......	0	0
Fulton	4,214	7	19.95	....	....	......	0	0
Richland	3,771	3	10.00	....	....	......	0	0
Rest of district	....	278	......	35	12.5	50 00	0	2
Totals for the State	....	11,241	......	3,023	26.9	133.45	32	183
Average for Dec. for past six years	....	8,222	......	2,526	30.7	161.15	33	146

REMARKS.—The reported mortality for December is 11,241, having risen from a daily average
of July, and is only exceeded by April, when the daily mortality was 463, the highest on record
infant mortality is about the same, and the number of deaths from zymotic diseases greater.
diphtheria considerably more, both being also increased over the preceding month of Novem-
ninety-eight localities, causing 725 deaths. Typhoid fever was reported from seventy-one local-
average mortality for December is in acute respiratory diseases, from which cause there were
and nervous systems, in each of which there is an increase of between 100 and 200. There were
mostly attributable to influenza (grippe), from which, outside of the large cities, only about 500
bility of reaching all deaths traceable to it. It is safe to say that 2,000 deaths were from this

FOR DECEMBER — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	15	2	0	2	2	6	2	0	3	5	4
0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	0	0	2	0
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0
0	0	3	0	0	2	7	0	70	17	1	25	9	20	27	11	11	56	17
47	....	246	78	33	41	725	115	2,731	1,090	100	646	593	801	1.183	296	416	732	1153
62	3	146	165	34	71	577	88	1,542	1,032	80	462	445	588	911	234	280	500	885

of 291 in November, the lowest of any month in the year, to one of 362. This is equal to that
for this State. Compared with December, 1890, the total mortality is about 2,500 greater; the
Measles and whooping cough caused fewer deaths than in December, 1890; scarlet fever and
ber. Scarlet fever is reported from forty-five localities, causing 246 deaths; diphtheria from
ities and caused 188 deaths, the smallest number for four months. The great increase over the
1,000 more deaths than in December, 1890, and in diseases of the digestive, urinary, circulatory
also about 300 more deaths from old age. The increase, amounting to about 2,500 deaths, is
deaths were reported as wholly or partly due. It is not reported separately from the impossi-
cause.

TOTALS OF MORTALITY IN THE SEVERAL SANITARY DISTRICTS FOR THE YEAR.

DISTRICTS.	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Smallpox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Maritime district	74,681	30,620	41.0	196.59	311	658	381	1	1,858	940	243	678
Hudson Valley district	12,209	3,092	25.3	158.08	71	372	85	......	94	84	24	102
Adirondack and Northern district	4,131	888	21.5	146.69	23	81	18	......	23	10	12	12
Mohawk Valley district	5,978	1,310	21.9	141.85	25	166	23	......	62	26	13	30
Southern Tier district	4,648	839	18.0	127.60	22	132	10	1	34	32	7	12
East Central district	5,113	1,066	20.8	137.10	28	135	24	......	25	19	14	17
West Central district	4,040	519	12.8	88.61	18	72	11	2	30	10	11	15
Lake Ontario and Western district	12,988	4,270	32.8	175.16	91	306	67	......	126	79	35	54

TOTALS OF MORTALITY IN THE SEVERAL SANITARY DISTRICTS FOR THE YEAR — (*Concluded*).

DISTRICTS.	Croup and diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal)	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
Maritime district	3,466	6,146	13,638	8,373	666	4,737	4,334	4,368	7,123	1,522	2,900	1,569	10,791
Hudson Valley district	378	720	2,053	1,343	81	912	545	1,045	1,539	300	505	990	957
Adirondack and Northern district	141	286	478	460	37	323	171	388	433	128	177	556	388
Mohawk Valley district	188	315	813	646	44	445	297	524	771	194	230	694	438
Southern Tier district	195	248	651	412	36	377	177	415	566	151	233	549	378
East Central district	89	350	612	546	38	380	275	431	616	172	214	717	411
West Central district	36	153	443	428	32	312	204	430	529	169	184	639	322
Lake Ontario and Western district	556	961	1,989	1,347	119	1,000	560	868	1,598	392	596	816	1,634

SUMMARY OF MORTALITY, ETC.

DISTRICTS.	From Typhoid Fever.						From Diphtheria.					
	1886	1887.	1888.	1889.	1890.	1891.	1886.	1887.	1888.	1889.	1890.	1891.
In each 1,000 deaths there were in the —												
Maritime district	8.41	8.55	8.66	9.65	9.26	8.81	71.43	75.40	67.95	63.00	49.10	46.41
Hudson Valley district	27.28	27.27	32.22	23.14	20.36	30.47	61.98	58.50	64.27	65.00	13.30	30.96
Adirondack and Northern district	20.58	24.00	18.34	23.01	13.33	19.60	43.35	49.00	46.57	33.87	37.90	34.13
Mohawk Valley district	21.91	20.45	21.98	21.32	30.71	27.76	36.80	67.40	65.52	52.12	52.70	31.45
Southern Tier district	26.00	30.40	28.38	33.92	28.61	28.39	41.03	44.40	34.18	34.54	35.28	41.97
East Central district	27.45	20.50	28.65	24.00	18.50	26.40	40.34	30.60	43.10	33.79	22.78	17 40
West Central district	20.42	19.05	17.28	19.53	17.49	17.57	20.42	30.80	23.88	27.07	16.88	8.91
Lake Ontario and Western district	19.18	19.05	23.07	21.28	21.58	23.55	58.26	58.67	51.09	35.78	32.64	42.03
The entire State	13.47	13.75	14.18	14.86	13.79	15.52	64.48	67.24	61.73	56.12	42.07	40.78

SUMMARY OF MORTALITY, ETC. — (*Concluded*).

DISTRICTS.	FROM DIARRHŒAL DISEASES.						FROM CONSUMPTION.					
	1886.	1887.	1888.	1889.	1890.	1891.	1886.	1887.	1888.	1889.	1890.	1891.
In each 1,000 deaths there were in the—												
Maritime district	91.31	107.00	91.58	86.04	82.58	82.29	140.52	121.80	124.10	123.20	127.72	112.11
Hudson Valley district	63.48	71.30	67.18	61.30	40.64	58.97	137.00	134.85	114.20	130.92	121.92	110.00
Adirondack and Northern district	58.06	63.00	60.55	62.00	43.28	69.23	137.90	122.00	110.91	121.76	108.50	111.35
Mohawk Valley district	53.93	73.60	61.60	65.90	56.39	52.69	132.30	111.25	115.36	113.50	112.40	108.08
Southern Tier district	59.88	71.20	54.02	58.11	52.72	53.37	100.95	94.40	100.73	88.49	89.50	88.64
East Central district	51.20	56.60	72.71	80.65	57.34	68.47	131.52	118.40	110.81	110.95	108.78	106.78
West Central district	54.47	58.30	37.96	46.53	44.54	37.87	141.08	115.40	112.20	110.35	106.83	105.94
Lake Ontario and Western district	80.27	113.10	99.43	88.63	75.90	73.22	125.77	105.55	103.60	104.46	106.12	102.94
The entire State	80.97	96.00	84.00	79.56	72.48	74.15	137.66	120.35	118.55	120.01	118.37	109.50

REMARKS.— The sanitary districts into which the State is divided are as follows: Maritime District: Includes New York, Long Island, Staten Island and Westchester county. Hudson Valley District: All the counties on either side of the Hudson river except Westchester, to and including Albany and Rensselaer. Adirondack and Northern District: The northern section of the State — the counties of Washington, Warren, Hamilton, Essex, Clinton, Franklin, St. Lawrence, Jefferson and Lewis. Mohawk Valley District: Schenectady, Schoharie, Saratoga, Montgomery, Fulton, Herkimer and Oneida counties. Southern Tier District: The seven counties along the southern border of the State. East Central District: Sullivan, Delaware, Otsego, Madison, Chenango, Onondaga and Cortland counties. West Central District: Cayuga, Tompkins, Seneca, Schuyler, Ontario, Yates, Livingston, Genesee and Wyoming counties. Lake Ontario and Western District: Oswego, Wayne, Monroe, Orleans, Niagara and Erie counties.

There have been 123,878 deaths reported during the year in the Monthly Bulletins, besides 4,200 deaths reported too late to be included in the Bulletin. It is estimated that 500 deaths occurred in fifteen localities, aggregating 30,000 population, which failed to make any returns, making the total number of deaths 128,578 in the State for the year. This makes the death rate for the year 21.43 per 1,000 population.

The zymotic death rate for the year is 178.00 per 1,000 deaths from all causes; for the first six months of the year 127.17, for the last six months, 229.76. This is lower than the average for five years, which is 193.00, but is a little higher than that of last year (169.00) with which it is more properly compared, the proportion being disturbed by epidemic influenza, not recorded separately and not included among these diseases, and which is estimated as having caused 8,000 deaths during its prevalence in March, April and May and 2,000 on its reappearance in December, making 10,000 deaths from this cause during the year, or double those of 1890. It was disturbed uniformly through all the sanitary districts. Zymotic diseases, aside from grippe, caused 22,000 deaths, 2,300 more than in 1890, and about the same in 1889. Small-pox caused five deaths, one in Jamestown in January, one in New York in April, and three in Seneca in November. Typhoid fever caused 1,925 deaths (1,612 in 1890). Diphtheria caused 5,072 deaths (4,915 in 1890). Diarrhœal diseases caused 9,179 deaths (8,468 in 1890). The tables given on this sheet shows their distribution by sanitary districts for the past six years. Scarlet fever caused 2,254 deaths (913 in 1890 which was very much less than in two years preceding). Measles had about the same mortality as in 1890 and Whooping Cough very much less. From Consumption there were 13,445 deaths (13,831 in 1890), and acute respiratory diseases 20,697 (18,053 in 1890), both years being greatly in excess of previous years. There was also a large increase in the mortality from all local diseases.

WATER SUPPLIES.

The samples were taken within four hours and were plated within two hours after the last sample was taken. It is believed that the results show the condition of the river water at the time that the samples were taken. The gelatine method of culture was used, a uniform amount of the culture medium being used and the amount of water added being varied according to the supposed amount of pollution. Three samples were taken at some places, one being taken near the east bank, one near the west bank, and one at the middle of the river. The sample at the middle was seldom taken, however. The locations of the cross sections are shown on plate I. A small steamboat was employed and the samples were taken in properly sterilized and protected bottles, at a depth of about eight inches, in such a manner as to secure samples undisturbed by the movements of the boat. Tables I and II give the results of the counts and such information regarding the circumstances of collection of each sample as seemed desirable to give. The first set was taken on flood tide. The results of this set are given in table I. Professor Mason's samples for chemical analysis were taken at the same time, but are not comparable with the biological samples, as he obtained at each location a sample which was a mixture of water from each side and the middle of the river. His samples for ebb-tide were taken prior to the date of taking the flood-tide samples, while ours were taken at a subsequent date. Table II gives results for ebb-tide, from Troy to Van Wie's Point, and for a subsequent set from the Albany water-works intake to Coxsackie. The inspection of the cities and villages along the banks of the river shows sewage entering the river at various points along the east bank in the village of Lansingburgh and the city of Troy. The sewers of the village of Greenbush discharge in a side channel and enter the main river above or below, according to the direction of the flow of the current. On the west side sewage enters from Waterford and Cohoes in relatively small quantities; from Green Island and West Troy in larger quantities; the city of Albany discharges its sewage into the basin, to be carried down stream on ebb tides and up stream in the main channel of the river, to some extent, during flood tides. No pollution of appreciable amount enters the river below Albany, as far as the collection of samples was carried. A more detailed statement of the sources of pollution and explanation of seeming discrepancies is reserved for the future detailed discussion. Enough has been given to make the results understood.

TABLE I.

June 30, 1891 — *Flood tide. High water at Albany*, 12.13 P. M.

Number.	Time.	Section.	NUMBER OF BACTERIA PER C. C. East side.	Middle.	West side.	AVERAGE OF Samples	Plates.	REMARKS.
14	A. M. 8.35	A	1388	......	......	1	2	Below State dam at Troy.
15	8.50	B	1875	......	......	1	2	Below Delaware & Hudson R. R. bridge.
16	9.00	C	5018	......	......	1	2	Below Congress street bridge.
17	9.05	C	......	......	1522	1	2	Below Congress street bridge.
18	9.15	D	6947	......	......	1	2	Opposite arsenal.
19	9.20	D	......	......	2154	1	2	Below arsenal.
20	9.30	E	3648	......	......	1	2	Near lower end of steel works.
21	9.35	E	......	......	2305	1	2	Near lower end of steel works.
22	9.45	F	......	......	......	....	.....	Rejected; accident.
23	9.50	F	......	......	2548	1	2	Above Base island dike; met up current.
24	10.05	G	......	......	3036	1	2	Near Pleasure island dock.
25	10.20	H	5454	......	......	1	2	Four hundred yards above Greenbush water-works.
26	10.25	H	......	......	3819	1	2	Four hundred yards above Greenbush water-works.
27	10.35	I	9565	......	......	1	2	Greenbush water-works intake, close to dock.
28	10.40	J	3609	......	......	1	2	Opposite intake of Albany water-works.
29	10.45	J	......	......	2004	1	2	Opposite intake of Albany water-works, close to dock.
30	11.00	K	6550	......	......	1	2	Opposite Island creek, below Albany.
31	11.05	K	......	12762	......	1	2	Opposite Island creek, below Albany.
32	11.10	K	......	......	34400	1	2	Opposite Island creek, below Albany.
33	11.15	L	9894	......	......	1	2	Below Douw's Point.
34	11.20	L	......	......	21622	1	2	Below Douw's Point.
35	11.30	M	5966	......	......	1	2	Opposite Beacon island.
36	11.35	M	......	......	18360	1	2	Opposite Beacon island.
37	M. 12.00	N	......	......	19782	1	2	Above Van Wie's Point light.
38	P. M. 12.10	O	6293	......	......	1	2	Opposite Van Wie's Point.
39	12.15	O	......	......	12310	1	2	Opposite Van Wie's Point.
				July 17, 1891 — *Flood tide.*				
....	P. M. 5.50	O	6462	......	......	1	3	Taken after blast in bed of river.
73	6.16	M	......	......	23500	1	2	Opposite Beacon island.
74	6.30	L	......	......	37366	1	2	Below Douw's Point.
75	6.40	K	3365	......	......	1	2	Opposite Island creek.
76	6.45	K	......	......	11646	1	2	Opposite Island creek.
				July 7 — *Upper Hudson River.*				
....	A. M. 11.10	....	......	374	......	1	2	Opposite Waterford water-works.
....	11.27	....	......	204	......	1	2	Opposite Troy water-works.
....	P. M. 2.40	....	......	309	......	1	2	Above North creek and any source of sewage pollution.

TABLE II.

July 2, 1891 — *Ebb tide. Low water at Albany,* 12.19 P. M.

Number.	Time.	Section.	NUMBER OF BACTERIA PER C. C.			AVERAGE OF		REMARKS.
			East side.	Middle.	West side	Samples.	Plates.	
	A M							
41	9.00	A	728	......	......	1	2	Below State dam at Troy.
42	9.20	B	1249	......	......	1	2	Below Delaware and Hudson R. R. bridge.
43	9.30	C	29.8	......	......	1	2	Below Congress street bridge
44	9.35	C	......	......	578	1	2	Below Congress street bridge.
45	9.40	D	2060	......	......	1	2	Opposite arsenal.
46	9.45	D	......	......	646	1	2	Below arsenal
47	9.52	E	3293	......	......	1	2	Near lower end of steel works.
48	9.55	E	......	......	1286	1	2	Near lower end of steel works.
49	10.05	F	3590	......	......	1	2	Above Base Island dike.
50	10 08	F	......	......	753	1	2	Above Base Island dike.
51	10.25	H	2490	......	......	1	2	Four hundred yards above Greenbush water works
52	10.30	H	......	......	1076	1	2	Four hundred yards above Greenbush water works.
53	10.32	I	1460	......	......	1	2	Greenbush water works, intake.
54	10.38	J	838	......	......	1	2	Opposite intake of Albany water works.
55	10.43	J	......	......	793	1	2	Opposite intake of Albany water works.
56	11.03	K	1289	......	......	1	2	Opposite Island creek.
57	11.05	K	......	1421	......	1	2	Opposite Island creek.
58	11.07	K	......	......	20850	1	2	Opposite Island creek.
59	11.15	L	896	......	......	1	2	Below Douw's point.
60	11.20	L	......	......	8993	1	2	Below Douw's point.
61	11.32	M	......	......	4146	1	2	Opposite Beacon island
62	11.40	M	......	......	4255	1	2	Above Van Wie's point light.
63	11.59	O	......	......	5004	1	2	Opposite Van Wie's point.

July 21, 1891 — *Ebb tide. Low water at Albany,* 5.04 P. M.

	P. M							
1*a*	12.15	J	11248	......	......	1	2	Opposite intake of Albany water works.
2*a*	12.17	J	......	......	14672	1	2	Opposite intake of Albany water works.
3*a*	12.25	K	16058	......	......	1	2	Opposite Island creek.
4*a*	12.27	K	......	25999	......	1	2	Opposite Island creek.
5*a*	12.30	K	......	......	4140	1	2	Opposite Island creek.
6*a*	1.15	L	12834	......	......	1	2	Below Douw's point.
7*a*	1.20	L	......	......	25728	1	2	Below Douw's point.
8*a*	1.30	M	15262	......	......	1	2	Opposite Beacon island.
9*a*	1.35	M	......	......	18576	1	2	Opposite Beacon island.
10*a*	1.50	O	11722	......	......	1	2	Opposite Van Wie's point.
11*a*	1.55	O	......	......	14688	1	2	Opposite Van Wie's point.
12*a*	2.10	P	13776	......	......	1	2	Opposite Winne's landing.
13*a*	2.15	P	......	......	11354	1	2	Opposite Winne's landing.
14*a*	2.30	Q	8442	......	......	1	2	Opposite second icehouse, Schermerhorn island.
15*a*	2.30	Q	......	......	15376	1	2	Opposite second icehouse, Schermerhorn island.
16*a*	2.45	R	1202	......	......	1	2	Near North Coeymans icehouses.
17*a*	2.45	R	......	......	1218	1	2	Near North Coeymans icehouses.
18*a*	3.10	S	766	......	......	1	2	Opposite Baeren island.
19*a*	3.15	S	......	......	477	1	2	Opposite Baeren island.
20*a*	3.30	T	......	......	301	1	2	Opposite icehouse below New Baltimore.
21*a*	3.35	T	364	......	......	1	2	Opposite icehouse below New Baltimore.
22*a*	4.00	U	......	174	......	1	2	Opposite Stuyvesant.
23*a*	4.25	V	236	......	......	1	2	Opposite Coxsackie.
24*a*	4.30	V	......	188	......	1	2	Opposite Coxsackie.
25*a*	4.35	V	......	......	189	1	2	Opposite Coxsackie.

The figures in Table I are plotted in red on Plate I. The figures in Table II are plotted in black on Plate I. The general location of the sources of pollution is indicated by the names of the towns on the map. It will be easy to follow the connection of the increases in numbers of bacteria with additions of polluting matter, and to follow the decrease in bacteria when there is no addition to the amount of pollution. It should be stated that the amount of pollution entering the river from the towns below Albany on the map, is very slight and does not materially affect the river. Detailed discussion of the results is postponed until other data can be included which have not been obtained in time for the report. It is evident from a study of the tables and plates that the work is of great value in forming an estimate of the pollution of the water and its power of self-purification. Many special problems have arisen in the progress of the work which are now being studied.

Some special investigations to determine the presence of bacteria which are common in sewage have been made. Large numbers of such bacteria have been found. During the progress of an epidemic of typhoid fever affecting several places along the rivers from Schenectady to Albany, examinations of samples from the Albany intake were made to determine, if possible, the presence of typhoid bacilli in the river water. The bacillus has not been found. A considerable number of positive observations on the presence of the bacillus of typhoid fever in river and well water, which have been reported during the past five or six years, are open to doubt. This is especially true of the earlier observations, in which there is an evident want of distinction between the bacillus coli communis and the typhoid bacillus. With appropriate methods the former may be readily isolated from any surface water receiving sewage from human or animal habitations. In fact, several of the methods which have been recommended for the detection of typhoid bacilli in water, are equally well, if not better, adapted for the detection of the bacillus coli. This bacillus is therefore very likely to appear in most cases when the typhoid bacillus is being sought for, and as these two organisms are very much alike, they may have been confused one with the other. The negative outcome does not, however, set aside the probability that typhoid bacilli may be present in polluted water at certain times, but simply registers the fact that, if present, they can not be brought to light by current methods with any degree of certainty. As stated above, the ordinary sewage bacteria are brought out by the same methods destined to reveal typhoid bacilli. Yet these sewage bacteria are often so numerous as to render the appearance of typhoid bacilli in our tests practically impossible. This may be easily demonstrated by adding the latter to water containing many bacteria and then endeavoring to find them in the mixture. Among the reports which may be received without much hesitation we may quote the following:

"Vincent (Annales de l'Institute Pasteur, 1890, p. 772) found during July, 1890, in water from the Seine, at Paris, the bacillus coli in all of six examinations and the typhoid bacillus in two out of the six. Miquel (Manuel pratique d'analyse bacteriologique des eaux, 1891, p. 175) states that he has frequently found typhoid bacilli in the Seine when testing rather large quantities of water (up to 100 cubic centimeters). Sormanni (Rev. d'ingien, e san. pubbl., 1891, p. 897) found typhoid bacilli in the water from a filter gallery, near Pisa, which was manifestly the cause of a very severe epidemic in November and December, of 1890. We purposely omit several equally positive reports concerning typhoid bacilli in wells accused of causing this disease.

Authorities in general are agreed that the negative outcome of efforts to find typhoid bacilli in suspected water does not prove anything as to their real absence and this is the position we hold after a prolonged trial of the most promising methods and a careful examination of the literature of the subject. Further and more detailed examinations of the water for sewage bacteria are in the plan for future work.

For the work on the Mohawk river, which was extended over a greater distance, a special method of plating samples in the field was devised, thus obviating the necessity of carrying the large refrigerating cans and taking a long trip each evening to the laboratory. A light row-boat was secured and used as the means of conveyance as soon as the river had attained sufficient size to carry one without too much carrying over rapids. A double can consisting of two tin pails one smaller in diameter by about three inches than the other and set inside it was used to carry the plates. A small piece of ice was sufficient to keep the plates cool enough, even in hot weather, to prevent too rapid growth of the bacteria in the inoculated plates. Sufficient space must be left, however, to carry enough ice to last from one source of supply to the next. The same ice was used to cool the apparatus and gelatine at the time of inoculation. The inner can was large enough to carry about three dozen plates, and when the supply was exhausted, a trip was made to the laboratory to obtain a fresh supply. The sterilized nutrient gelatine was carried in test tubes, the proper amount of gelatine in each tube for a single plate. In very hot weather the case containing these tubes must be carefully carried right side up or arranged to contain a little ice. The tubes are protected from infection by cotton plugs. Our experience is that with ordinary care the carriage of both plates and tubes without danger of contamination is very easy. A small plate set on leveling screws, a spherical level, a couple of pans to hold ice for cooling plates and a spirit lamp for melting gelatine, with droppers, note book, etc., completed the outfit.

The locations of the sources of pollution to the water are indicated on the map by the names of the cities, villages and settlements. All are sources of more or less pollution. Only Utica, Amsterdam and Schenectady have what may be termed complete systems of sewers. Little Falls has a fair system. The rest are served by private sewers of small extent or by small streams or surface ditches. The Canada creeks come from the Adirondacks and are practically free from sewage pollution. Schoharie creek comes from a thinly settled country and is also practically pure. Cayadutta creek is a small stream entering the river at Fonda. It has received a large amount of pollution from the factories and from the sewage of the cities of Gloversville and Johnstown. Chuctanunda creek, entering the river at Amsterdam, is a similar stream. This statement of the general sources of pollution with the map will give a good general idea of the polluting and the diluting streams.

Table III gives the results of the counts of the plates for each sample taken. In general, one sample was taken at each place and two plates were made. The figures given in the table are the averages of the results of the counts of the two plates. In some cases mentioned more and in some less were taken. It was found that sufficient rain to roil the water would vitiate the results, and some, as mentioned, were rejected on that account.

It should be said that in both the Hudson and the Mohawk work it was the intention to reduce the problem, which is in any case very complex, to the simplest terms, and therefore a season was chosen when there was as near a constant volume of water as possible and there were as few rain storms as possible to occasion even temporary changes of condition. It is believed that the results present the conditions of a given amount of sewage discharged into a given amount of water in a given condition, as nearly as possible to secure. There are many special problems which are now under discussion and experiment. For this reason these results are given without any discussion, simply to show the progress made, the apparent definiteness of the results, and the importance of the further detailed study and develpoment of methods which promise so clear and easy a way to determine the condition of river waters.

Plate II gives a graphical illustration of the results in Table III, and a map of the course of the Mohawk river.

TABLE 111 — MOHAWK RIVER, 1891.

DATE.	Number.	Time.	Number of bacteria per c. c.	AVERAGE OF		Remarks.
				Samples.	Plates.	
July 29	1	7.00 P. M.	765	1	2	Rome water-works dam above city.
" 29	2	8.00 "	473	1	2	Below feeder dam at Rome.
" 30	3	8.45 A. M.	1,400	1	2	Above Utica; below bone works.
" 30	4	10.15 "	32,403	1	2	Below Utica sewers
" 30	5	11.00 "	4,350	1	2	Opposite Masonic home two miles below Utica.
" 30	6	11.25 "	1,005	1	2	About four miles below Utica.
" 30	7	11.30 "	1,895	1	2	About four and one-quarter miles below Utica.
" 30	8	3.00 P. M.	1,106	1	2	Frankfort, above New York Central station.
" 30	9	4.55 "	1,932	1	2	Ilion, below New York Central station.
" 31	10, 11, 13, 14	9 A. M. to 1 P. M.	....	Rejected.	....	Water roily from rain.
August 6	17	2.37 P. M.	1,053	1	2	Opposite canal lock at Mohawk.
" 6	18	2.55 "	437	1	2	Opposite Herkimer at lower bridge.
" 6	20	3.50 "	298	1	2	West Canada creek.
" 6	19	3.30 "	767	1	2	One-half mile below mouth of West Canada creek.
July 31	15	2.35 "	877	2	4	State dam above Little Falls.
August 6	21	5.40 "				
July 31	16	4.30 "	10,800	2	4	Just below foot of falls, Little Falls.
August 6	22	6.15 "				
" 7	23	10.00 A. M.	10,007	1	1	About one and one-half miles below Little Falls.*
" 7	24	12.10 P. M.	9 533	1	2	State dam. five miles below Little Falls.
" 7	25	2.55 "	660	1	2	Above mouth of East Canada creek.
" 7	26	3.05 "	412	1	2	East Canada creek.
" 7	27	3.15 "	517	1	2	Twenty rods below mouth of East Canada creek.
" 8	28	10.15 A. M.	3,146	1	2	St. Johnsville, below creek draining village.
" 8	29	10.55 "	3,473	1	1	One-half mile below St Johnsville, below rapid.
" 8	30	11.30 "	1,953	1	2	Three miles below St. Johnsville.
" 8	31	1.15 P. M.	1,890	1	2	About two miles above Fort Plain.
" 8	32	2.35 "	823	2	3	Fort Plain, above New York Central station.
" 11	33	11.35 A. M.				
" 11	34	12.50 P. M.	696	1	1	One mile above Palatine Bridge.
" 11	35	2.15 "	304	1	1	Just above Palatine bridge.
" 11	36	3.00 "	273	1	1	Three-fourths of a mile below Palatine beidge.
" 11	37	4.50 "	560	1	1	At Sprakers, above rapids.
" 11	38	5.20 "	672	2	2	Three-fifths of a mile below Sprakers, below rapids.
" 12	40	9.20 A. M.				
" 12	41	2.25 P. M.	164	1	1	Above Cayadutta creek.
" 12	42	2.30 "	2,288	1	1	Cayadutta creek.
" 12	43	2.35 "	306	1	2	One half mile below Cayadutta creek.
" 12	44	2.40 "	416	1	2	Three-fourths of a mile below Cayadutta creek, below rapids, Fonda and Fultonville.

TABLE III — MOHAWK RIVER, 1891 — (*Concluded*)

DATE.	Number.	Time.	Number of bacteria per c. c	AVERAGE OF		Remarks.
				Samples.	Plates.	
Aug. 12 " 14	45 47	5.20 P. M 12.40 "	283	2	4	Above Schoharie creek.
" 12 " 14	46 48	5.45 " 12.55 "	51	2	4	Schoharie creek.
" 14	49	3.15 "	331	1	2	Opposite Akin station.
" 14	50	3.30 "	276	1	2	One-half mile below Akin.
" 14	51	4.25 "	231	1	2	Just above Amsterdam.
" 14	52	4.50 "	12,080	1	2	Chuctanunda creek.
" 14	53	4.53 "	11,765	1	2	Opposite Wendell's drug warehouse, Amsterdam.
" 14	54	5.03 "	5,403	1	2	Opposite Armour's beef house, Amsterdam.
" 14	55	5.13 "	6,562	1	2	Just below Amsterdam.
" 14	56	6.20 "	2,904	1	1	One-half mile below last mill in Amsterdam.
" 14	57	6.30 "	9,812	1	1	One mile below last mill, Amsterdam, near garbage dump.
" 14 " 15	58 59	7.00 " 9 00 A. M.	6,060	2	2	Opposite Cranes village, floating sewage.
" 15	60	9.20 "	1,104	1	2	One mile below Cranes village.
" 15	61	11.20 "	1,084	1	2	One fourth of a mile below Hoffman's ferry.
" 15	62	11.45 "	710	1	2	One and one-fourth of a mile below Hoffman's ferry.
" 15	63	1.50 P. M.	448	1	1	Above Fitchburg railroad bridge.
" 15	64	2.35 "	656	1	2	Three and one-half miles above Schenectady.
" 15	65	4.00 "	1,634	1	2	One-fourth of a mile above Van Slyke's island, above Schenectady.
" 15 " 17	66 68	4.45 " 10.45 A. M.	791	2	4	Above Glenville bridge, Schenectady.
" 17	69	11.00 "	444	1	2	Binnekill branch above Edison sewer.
" 17	70	11.05 "	7,276	1	2	Mill creek.
" 17	71	11.10 "	3,836	1	2	Binnekill branch below Edison sewer and Mill creek.
" 15 " 17	67 72	4.55 P. M. 11.20 A. M.	1,145	2	4	Opposite water-works, at intake.
" 17	73	11.21 "	440	1	2	Opposite water-works, north side of channel.
" 17	74	11.22 "	432	1	2	Above New York Central bridge, opposite ice-house.
" 17	75	11.25 "	312	1	2	Below New York Central bridge, opposite ice-house.
" 17	76	1.30 P. M.	196	1	2	Two hundred feet below sewer outlet, pond, sluggish current.
" 17	77	1.50 "	294	1	2	Above Delaware and Hudson railroad bridge.
" 17	78	2.00 "	424	1	2	Below Delaware and Hudson railroad bridge, opposite ice-house.
17	79	3.30 "	296	1	2	One mile above aqueduct.
17	80	4.10 "	216	1	2	Aqueduct dam.

* Garbage dump, three-quarter mile above the locality of this sample.

NOTE. — Accidents happened to samples below the aqueduct and reliable results were not obtained.

RENSSELAER POLYTECHNIC INSTITUTE,
TROY, N. Y., *December* 21, 1891.

DR. LEWIS BALCH, *Secretary State Board of Health :*

Dear Sir.—Judging from your favor lately received, that the investigation of the extent of sewage pollution of the Mohawk and Hudson rivers must be interrupted, permit me to present the following report of what chemical work has been so far completed:

On Thursday, June twenty-fifth last, samples were gathered from the Mohawk, beginning above Schenectady and ending below Cohoes falls. Two samples were also taken from the Hudson the same day; one representing the public supply of Waterford and the other the river portion of the supply of Troy.

On Saturday, June twenty-seventh, samples were taken from the Hudson in the morning, during ebb-tide, beginning at the State dam above Troy, and ending at Van Wie's point four miles below Albany.

On the morning of Tuesday, June thirtieth, the Hudson samples were again taken at the same points during flood tide. In all these cases the samples were taken in glass-stopped half-gallon bottles. Each Hudson sample represents a mixture of two or three samples (unless otherwise stated) taken two feet beneath the surface, and directly across the stream at each section, and the section are at intervals of one mile. The Mohawk samples were taken at very irregular intervals as circumstances demanded and represent single samples only.

The original intention, with which this investigation was started, having been to map out the zones of sewage contamination in the Mohawk-Hudson system, from the source of each river to Poughkeepsie, so that definite information could be secured as to the length of run required for the disposal of up-river sewage, and the relation of such self-purification to the question of the use of river water for city supply, it is hardly necessary to state that the results, so far obtained, are but the small beginning of the great mass of data required for such broad generalization.

Meager though they be, however, they are not without considerable value.

Accepting the sample taken at Rome, as representing unpolluted Mohawk water, there is no question but that the section of the river between Schenectady and Cohoes furnishes water unsuited for potable use, unless the quality be improved by artificial means.

This opinion is not based upon the figures of any one analysis considered *per se*, but rests upon the fact that the several samples covering that section of the river all bear pretty much the same relation to the unpolluted sample taken at Rome.

In other words, with the exception of a decrease in "Required Oxygen," due to the sedimentation arising from deep water and slow current after passing Schenectady, there is no material change for the better by the time the water reaches the West Troy (Dunsbeck) and Cohoes intakes, as compared with the condition of the water at the Schenectady intake, and simple inspection shows its pollution at this latter point.

Of course this conclusion is based upon only one set of samples, and proper allowance must be made for accidental disturbing causes. The results of Sample No. 11 are very misleading and would seem to show that the effect of Cohoes Falls upon the water is objectionable, but the difficulty lies in the impossibility of securing any but very roily water at the spot where the sample was taken. The accompanying chart shows some of the analytical results in grphic form.

The two samples taken from the Hudson river above the State dam at Troy, represent the public supplies of Waterford and Troy, respectively.

These samples were exceedingly roily and contained much floating vegetable matter, probably stirred up by the passage of the water over the rapids just above Waterford. The "Required Oxygen" and "Albuminoid Ammonia" are consequently high. The remaining Hudson samples were taken at intervals of one mile, from Troy to four miles below Albany.

The influence of Troy sewage, owing to the great volume of water in the Hudson river, is not sufficient to increase the quantity of chlorine indicated (note the difference in the case of the Mohawk), but there are other indications pointing to sewage pollution from that source, and, so far as the present investigation carries us, there is no appreciable self-purification of the stream by the time Albany is reached. Beyond Albany the pollution is markedly increased, and this time sufficiently to influence the quantity of chlorine present. The results are shown graphically on the accompany chart.

Respectfully submitted.

WILLIAM P. MASON.

CHAPTER 375.

AN ACT to provide for the construction of sewers in any incorporated village of this state.

APPROVED by the Governor June 6, 1889. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. The provisions of this act shall apply to any incorporated village in this state, whether such village shall have been incorporated under a general or by a special law, and the powers hereby conferred upon any such village are additional and supplementary to all other powers possessed by any such village under any general or special law; but all proceedings taken under this act shall be specified to be taken under the provisions of the general village sewer act of one thousand eight hundred and eighty-nine.

§ 2. In any such village not having a board of sewer commissioners or any officers other than the board of village trustees authorized to perform the general duties of sewer commissioners, the president and board of trustees of such village may, by a concurring vote of at least two-thirds of their entire number, if more than five, and by a majority of the entire number of five or less, appoint five citizens of said village, who shall be residents and tax payers thereof, to be sewer commissioners of said village. Such sewer commissioners shall be appointed for such terms of office respectively that the term of office of one such commissioner shall expire every year, and at the regular meeting of said board of trustees, next preceding the expiration of the term of office of any sewer commissioner so appointed, the successor of such commissioner shall be appointed in like manner for a term of five years. A vacancy occurring in the office of any sewer commissioner so appointed otherwise than by expiration of term shall be filled in like manner for the balance of the unexpired term. Such appointment shall be so made that not more than three of such commissioners in office at any one time shall have been appointed from the members of the same political party. The sewer commissioners so appointed shall be officers of said village, and shall constitute the board of sewer commissioners of such village, and shall receive no compensation for their services as such commissioners. The commissioners so appointed shall annually elect one of their number to be president, and a suitable person to be clerk of such board of sewer commissioners, who may be paid for his services a sum to be fixed by such board, not exceeding two hundred dollars per year, to be paid as other village expenses are paid. Said board may make by-laws for the conduct of their proceedings. (As amended by chapter 306, Laws of 1891.)

§ 3. In case a plan and map of a permanent system of sewerage for any such village shall not have been approved by the state board of health, the board of sewer commissioners of any such village, whether heretofore appointed or appointed under this act, shall, before taking any proceeding for the construction of any sewers under the provision of this act, cause such a map and plan to be made of a permanent system of sewerage for such village with such specification of dimensions, connections and outlets or sewage disposal works, when necessary, as shall be approved by and filed with the state board of health; and, for that purpose, the board of sewer commissioners may employ a competent engineer and such other persons as said board of sewer commissioners may deem necessary, but the total expense thereof shall not exceed two thousand dollars, and the amount of such expenses shall be included in the next annual tax levy of such village as a part of the ordinary expenditures of the village, and shall be paid by the village treasurer upon the order of the board of sewer commissioners, signed by the president and countersigned by the clerk of such board. When such map and plan shall have been so completed and approved, a copy thereof shall be open to public inspection in said village, and notice thereof shall be published once a week for two weeks in two newspapers published in said village, or in one newspaper, if there be but one so published, or if there be no newspaper published in said village, then in a newspaper published, in the place nearest to said village in which a newspaper is published. Changes may be made in said map and plan of such system of sewers, provided each change shall be first approved by and filed with the state board of health. (As amended by chapter 316, Laws of 1891.)

§ 4. In case the board of sewer commissioners of any such village shall, at any time, propose to construct the whole or any portion of such sewer system at the expense of the village at large, said board shall submit the question of the construction thereof, including the expense of constructing and maintaining sewage disposal works, to a special election as hereafter provided. Said board shall cause plans and specifications of such system or portion thereof proposed to be constructed, and an estimate of the maximum and minimum cost thereof to be made and to be open to public inspection. The said board may, by resolution, declare what proportion of the expense of such sewer system should be borne by the village at large, and what proportion of such expense ought to be borne by local assessment upon property specially benefited thereby, which proportions, respectively, shall be adjusted as equitably as may be with reference to the benefits to be conferred thereby upon the village at large and upon property specially benefited; and in such case the said board of sewer commissioners shall describe, with reasonable certainty, the area of territory within which such local assessments shall be made. Thereupon such board of sewer commissioners may, by resolution, declare their intention to construct the same, which resolution shall be published in the manner specified for the publication of the notice provided in the third section of this act, and which resolution shall specify the line of the sewers so proposed to be constructed, the estimated maximum and minimum expense thereof, and the proportion of said expense to be assessed upon the village at large, and the proportion of such expense to be paid by local assessments upon the property owners specially benefited, and a description of the area of such local assessment, and the place and time at which a special election shall be held in said village for the purpose of determining whether the same shall be constructed. Said special election shall be held at the time and place specified in said resolution so published, and shall be conducted in all respects as special elections for like purposes are required to be conducted by the charter of said village, if such village shall have been incorporated by a special act providing for the holding of such special elections, so far as such provisions are applicable; otherwise such special election shall be conducted in all respects as special elections for passing upon questions of raising money for extraordinary expenditures are required to be conducted by chapter two hundred and ninety-one of the laws of one thousand eight hundred and seventy, so far as applicable.

§ 5. In case a majority of the votes cast at such special election shall be against such resolution, then no other shall be called by such board of sewer commissioners during the same fiscal year.

§ 6. In case a majority of the votes cast at any such special election shall be in favor of such resolution, then the said board of sewer commissioners shall advertise for proposals for constructing such portion of said system of sewerage and for furnishing materials for the same, either under entire contract, or in parts or in sections, under special contracts, as they shall deem for the best interests of the village, in the manner specified in the third section hereof for the publication of the notice therein provided, and in such other newspapers as said board of sewer commissioners shall deem advisable. The said board of sewer commissioners may require a bond or deposit to be made by each party submitting such proposals as a guarantee of the good faith thereof, such deposit to be forfeited to the village, or the liability upon each bond to accrue in case the party submitting such proposals shall refuse to enter into a contract in accordance therewith, in case such proposals shall be accepted. Said board of sewer commissioners shall have the power when for any reason they shall deem it advantageous to the interests of such village to reject all proposals and bids made to them, and may contract with other than the lowest bidder for such material and work or any part thereof, and may, whenever they deem necessary, readvertise for the same. Said board of sewer commissioners shall require any party that shall contract for doing said work or furnishing the said materials, or any part thereof, to give sufficient security, to be approved by them for the faithful performance of such contract or contracts, or to indemnify and save harmless said village and the said board of sewer commissioners from any damage or loss for which it or they may become liable by reason of any negligence or carelessness on the part of said contractor, his assigns, agents, servants or employees, or for improperly grading any and all excavations, trenches, accumulations or obstructions caused by or made in the course of the construction of the portion of the sewers covered by said contract or contracts, or from neglecting or refusing to properly restore the surface of any highway, street, alley, lane or place through which such sewers or drains shall have been laid, and to restore to a proper and safe condition; but no contract shall be entered into for the construction of such portion of said sewers specified in said resolution by which a greater amount shall be agreed to be paid therefor than the maximum sum in such resolution specified.

§ 7. The proportion of the expenses of constructing such sewer specified in said resolution so published as aforesaid to be assessed upon the owner or owners of lands within the area of local assessment, as aforesaid, in proportion as nearly as may be to the benefit and advantages which each will receive thereby, and such apportionment and assessment shall be binding upon such owner or owners, and shall be a lien upon such lands, to be collected in the same manner as other village taxes and assessments are collected, but no such apportionment and assessment shall be made without at least six days notice of the time and place of such apportionment and assessment to each of such land-owners, whose residence is known, which notice shall be served personally by delivering a written copy thereof to each of such persons who can with reasonable diligence be found in said village, or otherwise by mail addressed to the last known post-office address of such person. After the assessment and apportionment hereinbefore provided for shall be completed, the same or a copy thereof shall be left with the village clerk, and there remain for a period of ten days. The said board of sewer commissioners shall, after they have delivered such apportionment and assessment to said village clerk aforesaid, give public notice by posting the same in at least three of the most public places in such village, stating that such assessment and apportionment have been made and completed, and the officer to whom the same shall have been delivered, and the place where the same will be open to public inspection for ten days thereafter. Any person who may feel aggrieved by said apportionment and assessment may, before said ten days notice shall expire, appeal therefrom to the county judge of the county in which such village is situated, by serving at least ten days notice of such appeal, on the president or clerk of the board of sewer commissioners, and the said county judge shall thereupon appoint three disinterested freeholders of said village, not residents of such area of local assessment, as commissioners to review such apportionment and assessment, who shall examine the same and all the lots and real estate upon which the same is made, and fix and determine the assessment thereon, and their determination shall be final and conclusive. The fees of the commissioners so appointed by the county judge, not exceeding five dollars per day, shall be paid as ordinary village expenditure in case their determination shall be more favorable to the appellant, in a sum not less than twenty dollars than the assessment made by the board of sewer commissioners, otherwise the expense of such commissioners shall be paid by such appellant.

§ 8. Whenever a petition shall be presented to the board of sewer commissioners of any village signed by the owners of at least five hundred lineal feet of any of the lands fronting on any street, lane or alley through which a sewer is projected, on said plan of the sewerage system of such village for the construction thereof, to be paid for wholly by the owners of the lands specially benefited, then the said board of sewer commissioners shall cause at least ten days' notice to be given to the owners of lands fronting on such portion of said street, lane or alley of a time and place where said board of sewer commissioners will meet and hear persons interested for and against the construction of such portion of said sewer system. Such notice shall be served by the publication thereof in a newspaper of said village to be designated by said board of sewer commissioners, once in one week at least ten days before such meeting, and in case no newspaper is published in said village by posting said notice in five public places in said village at least ten days before such meeting. At such hearing said board of sewer commissioners shall take proof as to the persons signing said petition being the owners of a sufficient quantity of lands fronting on said street as herein required, and their determination after hearing such proofs that a petition for such sewer has been signed by persons owning at least five hundred lineal feet of lands fronting on any street, lane or alley through which a sewer is projected, shall be final and conclusive as to such fact and question. If after hearing had in accordance with such notice, the said board shall determine to construct such portion of said system of sewerage the said board shall proceed to enter into contracts therefor in the manner prescribed by the sixth section of this act, and to apportion and assess the expense thereof upon the property specially benefited thereby in like manner and with like effect as herein provided in the seventh section of this act. In case it is desired to construct any sewer along any street, lane or alley which is less than five hundred feet in length, a petition signed by the owners of one-half of the lands fronting on the line of said proposed sewer shall be sufficient for all the purposes of this act, and shall authorize the board of sewer commissioners to proceed and cause the same to be constructed as hereinbefore provided. In all cases where a petition is presented for the construction of a sewer through different streets, lanes or alleys through which a sewer is projected on said plan of the sewerage system of such village, said sewer for all the purposes of this act shall be deemed as one sewer, and such different streets, lanes or alleys shall be deemed and considered as one continuous street, lane or alley. (As amended by chapter 316, Laws of 1891.)

§ 9. The board of sewer commissioners of any such village may acquire title to any property necessary to construct such portion of the sewerage system of such village as they shall be authorized to construct under this act, in the manner provided by subdivision twenty-nine of section three of title three of chapter two hundred and ninety-one of the laws of one thousand eight hundred and seventy, and said board of sewer commissioners shall have all the powers conferred upon the president and trustees of a village by said subdivision.

§ 10. For the providing of funds for the payment of the expenses authorized by this act, and for the construction and completion of such system of sewerage in any village, the board of sewer commissioners thereof is hereby authorized and empowered to issue its certificates of indebtedness, or bonds from time to time, and to pledge the faith and credit of said village for the payment of work, material funished, lands taken and other expenses of said work, bearing interest not exceeding five per cent per annum on all bonds running over one year, in such amount and upon such time as may be determined by said board. Such bonds shall be signed by the president and countersigned by the clerk of said board of such village, and shall be made payable at such times as said board of sewer commissioners shall deem best, not exceeding twenty years from the date of the issue thereof, but the same shall not be sold for less than the par value thereof, and shall be numbered consecutively as issued, and a record of the number, amount, rate of interest and time when payable, shall be kept by the clerk of the board of sewer commissioners, who shall furnish a copy of such record to the clerk of said village who shall also keep a record thereof. The said bonds shall, before sale or negotiation thereof, be delivered to the treasurer of said village, who shall have charge of the sale and negotiation thereof, and the proceeds of such sale and of all moneys raised by taxation for sewer purposes shall be credited to a separate fund called the sewer fund of said village. All expenditures authorized to be made by the board of sewer commissioners of any village by virtue of this act shall be paid by the treasurer of said village upon the order of the board of sewer commissioners signed by the president and countersigned by the clerk thereof.

said section seven of this act, and all the provisions as to appeals from the first assessment as provided by section seven of this act, are hereby made applicable to appeals from the reassessment and reapportionment of said costs and expenses of such sewer and shall be determined in the same manner and with the same force and effect. From and after the expiration of the time limited in which to appeal from such reassessment and reapportionment, in case no appeal is taken; and if an appeal is taken from and after the determination of the same, such reapportionment, reassessment and tax so reassessed shall be binding upon such owner or owners of said lands, and shall be a lien upon such lands to be enforced and collected in the same manner as other village taxes are collected. (As amended by chapter 316, Laws of 1891.)

§ 15. This act shall take effect immediately.

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